

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 P41405493PCT00	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/SE2015/050025	International filing date (day/month/year) 14.01.2015	Priority date (day/month/year)	
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. ☒ (sent to the applicant and to the International Bureau) a total of <u>7</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which have been amended and/or sheets containing rectifications authorized by this Authority, unless those sheets were superseded or cancelled, and any accompanying letters (see Rules 46.5, 66.8, 70.16, 91.2, and Section 607 of the Administrative Instructions).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 ☐ superseded sheets and any accompanying letters, where this Authority either considers that the superseding sheets contain an amendment that goes beyond the disclosure in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. ☐ (sent to the International Bureau only) 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 statement 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 10.03.2017	
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	



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

1-20 filed in electronic form on 10-02-2017

Drawings, Sheets

1/10-10/10 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. 21
 - ☐ 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/SE2015/050025

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>1-20</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>1-20</u>
	No: Claims	
Industrial applicability (IA)	Yes: Claims	<u>1-20</u>
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

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

Reference is made to the following documents.

- D1 DATABASE WPI
 Thomson Scientific, London, GB;
 AN 1997-
 & JP H09 31823 A (TOYO BOSEKI) 4 February 1997 (1997-02-04)
- D2 US 5 951 535 A (FUJIWARA TOSHIKATSU ET AL) 14 September 1999
 (1999-09-14)
- D3 US 4 704 112 A (SUZUKI MIGAKU ET AL) 3 November 1987
 (1987-11-03)

- 1 The present application relates to an absorbent product (8; 12, 16; 22; 25) comprising a chassis (26) having a front and rear panel (17, 19) and an absorbent body (11) having a wetting zone for receiving urine and other bodily fluids, the absorbent product comprising a nonwoven material (1) arranged to be in contact with skin of a user during use of the absorbent product (8; 12, 16; 22; 25), wherein the nonwoven material (1) is located outside the wetting zone and comprises at least on a skin contacting surface a mixture of non-absorbent and absorbent fibres, wherein the absorbent fibres are present in an amount of 2-10% by weight, based on the total weight of the fibres in the nonwoven material (1), and wherein the non-absorbent fibres have a coarseness of 3.5 to 10 dtex and the absorbent fibres have a coarseness of 1 to 10 dtex (claims 1, 3, 5-16); an absorbent product (8; 12, 16; 22; 25) comprising a chassis (26) having a front and rear panel (17, 19) and an absorbent body (11) having a wetting zone for receiving urine and other bodily fluids, the absorbent product comprising a nonwoven material (1) arranged to be in contact with skin of a user during use of the absorbent product (8; 12, 16; 22; 25), wherein the nonwoven material (1) is located only outside the wetting zone and comprises at least on a skin contacting surface a mixture of non-absorbent and absorbent fibres, wherein the absorbent fibres are present in an amount of 2-10% by weight, based on the total weight of the fibres in the nonwoven material (1), and wherein the non-absorbent fibres have a coarseness of 1.8 to 10 dtex and the absorbent fibres have a

coarseness of 1 to 10 dtex (claims 2, 4-16); an absorbent product (8; 12,16; 22; 25) comprising a chassis (26) having a front and rear panel (17, 19) and an absorbent body (11) having a wetting zone for receiving urine and other bodily fluids, the absorbent product comprising a carded nonwoven material (1) arranged to be in contact with skin of a user during use of the absorbent product (8; 12, 16; 22; 25), wherein the nonwoven material (1) has a basis weight of 18 g/m², is located outside the wetting zone and comprises at least on a skin contacting surface a mixture of non-absorbent fibers comprising polypropylene and absorbent fibres comprising viscose, wherein the absorbent fibres are present in an amount of 2% by weight, based on the total weight of the fibres in the nonwoven material (1), and wherein the non-absorbent fibres have a coarseness of 3.3 dtex and the absorbent fibres have a coarseness of 1.7 dtex (claim 17) and use of such a nonwoven material in an absorbent/hygiene product to reduce wet friction between on the skin (claims 18-20).

2 Novelty

- 2.1 Document D1 discloses a laminate of nonwoven material obtained by laminating a hydrophobic layer comprising a hydrophobic fibre with a coarseness of 0.2-3 denier (0,18-2,7 dtex) and a basis weight of 5-40 g/m² weight to a hydrophilic layer with a basis weight of 40-200 g/m² consisting essentially of a hydrophilic fibre (abstract; paragraphs [0003], [0005]-[0006], [0011]-[0012], [0023]). A part of the hydrophilic layer is exposed in the surface of the hydrophobic layer. Example 1 describes a laminate comprising a 60 g/m² hydrophilic layer of short fibres with a coarseness of 1 denier (1.11 dtex) and a 10 g/m² hydrophobic layer of long fibres with a coarseness of 1.8 denier (2 dtex). The laminate is hydroentangled so that the hydrophilic fibres are partly exposed to in the hydrophobic surface.

The object in document D1 is to obtain nonwoven fabric excellent in handle and touch in an ordinary use, immediately absorbing a liquid such as water, sweat, etc., and when absorbing the liquid, diffusing the absorbed water, sweat, etc., to the opposite side, etc., thus giving rise to neither a wet feeling nor a greasiness feeling.

The nonwoven material disclosed in document D1 reduces the wetness of the surface in contact with the wearer, meaning that the material reduces wet friction between the nonwoven material and the skin of the user.

Document D1 does not disclose a nonwoven material comprising 2-10% by weight absorbent fibres. As such, document D1 does not disclose an absorbent product comprising a chassis having a front and a rear panel and an absorbent body. In document D1, the product is an undergarment and the surface weight of the hydrophobic layer is equal to the surface weight of the hydrophilic layer, i.e. preferably 10-30 g/m, and therefore the amount of hydrophilic fibres is higher than in the product of independent claims 1, 2 or 17. Furthermore, as D1 does not disclose an absorbent product with a chassis and an absorbent body, there is no mention about the nonwoven material being located outside the wetting zone.

Thus, document D1 does not anticipate the subject-matter of independent claims 1, 2, 17 and 18.

- 2.2 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, meaning that the material reduces wet friction between the nonwoven material and the skin of the user.

The hydrophobic long fibers may 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). Example 6 describes 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.

In document D2, a range of 0-70% and a range of 0-30% of hydrophilic fibers is disclosed. The specific range of 2 to 10% as claimed in present claim 1 or 2 is not disclosed. Furthermore, the specific 2% as claimed in present claim 17 is also not disclosed.

The nonwoven material disclosed in document D2 reduces the wetness of the surface in contact with the wearer.

Thus, document D2 does not anticipate the subject-matter of independent claims 1, 2, 17 and 18.

- 2.3 D3 discloses a facing material for an absorptive pad being a combined nonwoven fabric having two layers, a layer in contact with the wearers skin of 70-100 wt% hydrophobic fibres and 0-30 wt% hydrophilic fibres and a backing layer of 50-100 wt% hydrophilic fibres and 0-50 wt% hydrophobic fibres.. The facing 11 should comprise in the layer in contact with the user 100% by weight of hydrophobic fibres but it may comprise hydrophilic fibres from 0 to 30% by weight (column 2, lines 1-18; col.2, lines 62- col. 3, line 2).

Example 9 describes a material comprising 70 wt% hydrophobic fibres with a coarseness of 1.4 denier (1.55 dtex) and 30 wt% hydrophilic fibres with a coarseness of 1.5 denier (1.67 dtex).

The nonwoven material disclosed in D3 is aimed to be used as a top sheet in absorptive articles such as diapers and sanitary napkins (col. 1, lines 6-8).

Document D3 does not disclose the specific range of the absorbent fibres being present in the amount of 2-10%.

Taken as a whole, document D3 does not anticipate the subject-matter of independent claims 1, 2, 17 and 18.

In view of the fact that none of the available prior art documents disclose the features of independent claims 1, 2, 17 and 18, claims 1-20 are considered new in the sense of Art. 33(3) PCT.

3 Inventive step

- 3.1 Document D2 is considered to represent the closest prior art of the cited documents, since the nonwoven material in D2 is aimed for the same purpose as the nonwoven material of the present claims 1, 2 or 17, i.e. to function as a material being in contact with the skin of the user.

Furthermore, the nonwoven material in document D2 is used as a top sheet in a diaper, napkin or panty liner (Fig. 1 and 2; col. 3, lines 50-62; col. 3, lines 40-col. 5, line 14; col. 18, lines 16-24; col. 35, lines 2-12). The top sheet covers the complete absorbent product including the wetting zone, meaning that the nonwoven material is located outside the wetting zone. In particular, the wings on a sanitary napkin, formed by extending the top sheet and the back sheet from the vicinity of the center of the napkin, are located outside the wetting zone (col. 18, lines 16-24).

"Located outside the wetting zone" is broadly interpreted as referring to the fact that the nonwoven material must be localised/present at least in a region outside an initial wetting zone. This is in accordance with the disclosure of the present the application, where it is stipulated that the nonwoven "is especially suitable to be used at region outside an initial wetting zone or landing zone of the absorbent products, this means that the nonwoven may at least partially cover the absorbent structure, but is preferably located outside the initial wetting zone or landing zone", meaning that the nonwoven material maybe the whole top sheet.

The nonwoven material disclosed in document D2 reduces the wetness of the surface in contact with the wearer.

3.2 Claim 1 differs from the disclosure of document D2 as stated above in that the absorbent fibres are present in the specific amount of 2-10%. Furthermore, claim 1 differs from the disclosure of document D2 in that the non- absorbent fibres have a coarseness of 3.5 to 10 dtex, whereas in D2 the PP/PE fibers of the fabric have a fineness of 2 denier (2.22 dtex).

3.2.1 According to the application, by using hydrophobic fibres in the nonwoven, by using a small amount of absorbent fibres to absorb moisture and by using coarser non-absorbent fibers, the wet friction can be reduced. In particular, Fig 3b shows that a material containing 2% viscose fibres and 98% polypropylene has a considerably lower friction than the corresponding material made out of 100% PP fibres. Furthermore, Fig 3a shows that wet friction between the nonwoven material and the skin is decreased by using a coarser non-absorbent fiber.

According to the application, the technical effect obtained by these features is that comfort of the absorbent product can be improved as the wet friction and/or clinging in the presence of moisture can be reduced in the region(s)

outside a wetting zone in the absorbent body (page 2, lines 19-23). By using a larger amount of coarser hydrophobic fibres in the nonwoven and by using a small amount of absorbent fibres to absorb moisture, the wet friction can be reduced. By doing so, the comfort of the absorbent product is improved.

3.2.2 Starting from document D2, the problem to be solved by claim 1 may be defined as providing an absorbent product with improved comfort to the skin.

3.2.2.1 It has not been recognized in the prior art that comfort can be improved by reducing wet friction and/or clinging and this is also clearly stated in the present application (e.g. see page 2). Furthermore, there is no suggestion in the prior art towards the present solution in which a specific amount of absorbent fibres and coarser non-absorbent fibers are used in the nonwoven material and to improve the comfort of the product.

3.2.2.2 The skilled person cannot find a solution to this problem through consideration of D2. D2 does not address the problem of clinging or wet friction at all. Nor does D2 give the skilled person any incentive to increase the coarseness of the non-absorbent fibers of the nonwoven. Furthermore, D2 does not disclose an absorbent product having a nonwoven material comprising absorbent fibres that are present in an amount of 2-10% by weight.

3.2.2.3 None of the further cited documents D1 or D3 address the problem of reducing clinging or wet friction in an absorbent product. Moreover, none of D1 or D3 discloses an absorbent product having a nonwoven material comprising absorbent fibres having a coarseness of 3.5 to 10 dtex. Furthermore, none of D1 or D3 disclose an absorbent product having nonwoven material comprising absorbent fibres that are present in an amount of 2-10% by weight.

3.2.3 Therefore, claim 1 involves an inventive step in the sense of Art. 33(3) PCT.
The same arguments apply for the inventive step of independent claims 17 and 18 *mutatis mutandis*.

3.3 Claim 2 differs from D2 at least in that it recites that the nonwoven material is located only outside the wetting zone and comprises absorbent fibres present in an amount of 2-10% by weight. These differences give rise to an effect of reducing clinging of the absorbent article to skin in places where small amounts of moisture originating from e.g. perspiration are present, see the application page 2, line 12 - page 3, line 2.

- 3.3.1 Starting from document D2, the person skilled in the art is therefore faced with the objective technical problem of providing an absorbent product with improved comfort to the skin during use in areas where small amounts of moisture are present.
- 3.3.2 The skilled person cannot find a solution to this problem through consideration of D2. D2 does not address the problem of clinging or wet friction at all. Nor does D2 disclose an absorbent product having the relevant nonwoven material located only outside the wetting zone. Instead, it is apparent from D2 that the non-woven fabric disclosed is intended for use in locations subject to wetting. In this context it is noted that although D2 mentions an absorbent product comprising wings or side gathers (col. 18, lines 16-41), there is no suggestion or indication in the document that these components should be made of the relevant non-woven. Furthermore, D2 does not disclose an absorbent product having a nonwoven material comprising absorbent fibres that are present in an amount of 2-10% by weight.
- 3.3.3 None of the further cited documents D1 or D3 address the problem of reducing clinging in an absorbent product. Moreover, none of D1 or D3 discloses an absorbent product having the relevant nonwoven material located only outside the wetting zone. Furthermore, none of D1 or D3 discloses an absorbent product having a nonwoven material comprising absorbent fibres that are present in an amount of 2-10% by weight.
- 3.3.4 Therefore, claim 2 is considered to involve an inventive step in the sense of Art. 33(3) PCT.
- 3.4 Dependent claims 3-16, 19 and 20 are therefore also considered to involve an inventive step in the sense of Art. 33(3) PCT.

Zacco Sweden AB, P.O.Box 5581, SE-114 85 Stockholm, Sweden

European Patent Office
D-80298 MUNICH
Germany

Date: 10 February 2017
Our ref: P41405493PCT00 TRH/TRH

Appl./Reg.No.: PCT/SE2015/050025
Applicant: SCA Hygiene Products AB

Dear Sirs,

Reference is made to the Written Opinion by the International Preliminary Examination Authority dated 13 December 2016. The applicant hereby files an amended set of claims and arguments below.

Amendments

Claims 1 and 18 have been amended so that the lower limit for the thickness of the fibres is 3.5 instead of 1.8. The amendment is supported by the previous claim 2. The previous claim 2, now 3 has been amended accordingly.

New claim 2 has been added which corresponds to the wording of the previous claim 1 except that it has been defined that the nonwoven material is only located only outside the wetting zone. Support for the amendment can be found from by the features defined on p. 5 l. 10-16 and p. 17, l. 28 – p. 18 l. 2, p. 19, l. 11-20. New claim 4 depending on the added claim 2 and corresponding to the wording of the previous claim 2 has been added.

Further, a new claim 17 has been added. Support for the amendment can be found from the original claim 1 and Material F as disclosed in the application on Table of p. 15.

The remaining claims have been renumbered accordingly.

Cited documents

The following documents were cited in the ISR and the accompanying WO:

D1: JPH0931823
D2: US5951535
D3: US4704112

Inventive step

Document D2 is considered to represent the closest prior art since the nonwoven material in D2 is also intended to function as a material being in contact with the skin of the user.

Claim 1 differs from D2 at least in that it recites a nonwoven material comprising absorbent fibres that are present in an amount of 2-10% by weight, based on the total weight of the fibres in the nonwoven material (1), and wherein the non-absorbent fibres have a coarseness of 3.5 to 10 dtex. In contrast, the fabric disclosed in example 6 of D2 comprises 30% by weight of rayon fibers, and the PP/PE fibers of the fabric have a fineness of 2 denier (2.22 dtex).

The effect of these differences is that wet friction between the nonwoven material and skin is decreased due to using a coarser non-absorbent fiber, as demonstrated in Figure 3a and page 15 of the present application. This results in the absorbent product manufactured so that it includes a nonwoven clinging less to the skin during use.

Thus, the person skilled in the art with knowledge of D2 is faced with a technical problem of providing an absorbent product that is less prone to clinging to the skin during use. It should be noted that, as demonstrated in the present application, this is an entirely separate problem to the problem of reducing wetness as known in the art. The present application makes clear that wet friction (“clinging”) varies nonlinearly with the moisture content of the nonwoven material and that a peak in wet friction actually occurs when the nonwoven material is very nearly, yet not completely, dry. See for example p. 13 l. 26 – p. 15 l. 6 of the present application, as well as Figures 3a and 3b. Therefore, a reduction in wetness of the surface in contact with the wearer does not at all necessarily lead to a reduction in wet friction as stated in the Written Opinion. Thus, the applicant considers that correlating reduction in wetness with reduction of wet friction is not correct, when in actual fact wet friction is a heretofore unrecognised parameter that is of significant importance when considering the comfort of absorbent products.

The skilled person cannot find a solution to this problem through consideration of D2. D2 does not address the problem of clinging or wet friction at all. Nor does D2 give the skilled person any incentive to increase the coarseness of the non-absorbent fibers of the nonwoven. Furthermore, D2 does not disclose an absorbent product having a nonwoven material comprising absorbent fibres that are present in an amount of 2-10% by weight.

None of the further cited documents D1 or D3 address the problem of reducing clinging or wet friction in an absorbent product. Moreover, none of D1 or D3 discloses an absorbent product having a nonwoven material comprising absorbent fibres having a coarseness of 3.5 to 10 dtex. Furthermore, none of D1 or D3 disclose an absorbent product having nonwoven material comprising absorbent fibres that are present in an amount of 2-10% by weight.

Therefore, claim 1 is in possession of inventive step over the cited documents.

The same arguments apply for the inventive step of independent claims 17 and 18 *mutatis mutandis*.

Claim 2 differs from D2 at least in that it recites that the nonwoven material is located only outside the wetting zone and comprises absorbent fibres present in an amount of 2-10% by weight. These differences give rise to an effect of reducing clinging of the absorbent article to skin in places where small amounts of moisture originating from e.g. perspiration are present, see the application p. 2 l. 12 – p. 3 l. 2. The person skilled in the art with knowledge of D2 is therefore faced with the objective technical problem of providing an absorbent product that is less prone to clinging to the skin during use in areas where small amounts of moisture are present. Again, it should be noted that this is an entirely separate problem to the problem of reducing wetness as known in the art.

The skilled person cannot find a solution to this problem through consideration of D2. D2 does not address the problem of clinging or wet friction at all. Nor does D2 disclose an absorbent product having the relevant nonwoven material located only outside the wetting zone. Instead, it is apparent from D2 that the non-woven fabric disclosed is intended for use in locations subject to wetting. In this context it is noted that although D2 mentions an absorbent product comprising wings or side gathers (col. 18 l. 16-41), there is no suggestion or indication in the document that these components should be made of the relevant non-woven. Furthermore, D2 does not disclose an absorbent product having a nonwoven material comprising absorbent fibres that are present in an amount of 2-10% by weight.

None of the further cited documents D1 or D3 address the problem of reducing clinging in an absorbent product. Moreover, none of D1 or D3 discloses an absorbent product having the relevant nonwoven material located only outside the wetting zone. Furthermore, none of D1 or D3 discloses an absorbent product having a nonwoven material comprising absorbent fibres that are present in an amount of 2-10% by weight.

Therefore, claim 2 is in possession of inventive step over the cited documents.

Accordingly, the invention defined in the claims of the present application are both novel and involve an inventive step over the cited prior art. Therefore, a positive IPER is foreseen.

Yours faithfully
Zacco Sweden AB



Teija Rasch

Encl.: Amended claims; clean and marked copy

CLAIMS

1. Absorbent product (8; 12, 16; 22; 25) comprising a chassis (26) having a front and rear panel (17, 19) and an absorbent body (11) having a wetting zone for receiving urine and other bodily fluids, the absorbent product comprising a nonwoven material (1) arranged to be in contact with skin of a user during use of the absorbent product (8; 12, 16; 22; 25), wherein the nonwoven material (1) is located outside the wetting zone and comprises at least on a skin contacting surface a mixture of non-absorbent and absorbent fibres, wherein the absorbent fibres are present in an amount of 2-10% by weight, based on the total weight of the fibres in the nonwoven material (1), and wherein the non-absorbent fibres have a coarseness of 3.5 to 10 dtex and the absorbent fibres have a coarseness of 1 to 10 dtex.
2. Absorbent product (8; 12, 16; 22; 25) comprising a chassis (26) having a front and rear panel (17, 19) and an absorbent body (11) having a wetting zone for receiving urine and other bodily fluids, the absorbent product comprising a nonwoven material (1) arranged to be in contact with skin of a user during use of the absorbent product (8; 12, 16; 22; 25), wherein the nonwoven material (1) is located only outside the wetting zone and comprises at least on a skin contacting surface a mixture of non-absorbent and absorbent fibres, wherein the absorbent fibres are present in an amount of 2-10% by weight, based on the total weight of the fibres in the nonwoven material (1), and wherein the non-absorbent fibres have a coarseness of 1.8 to 10 dtex and the absorbent fibres have a coarseness of 1 to 10 dtex.
3. Absorbent product (8; 12, 16; 22; 25) according to claim 1, wherein the non-absorbent fibres have a coarseness of 3.5 to 7 dtex, or 5.5 to 7 dtex.
4. Absorbent product (8; 12, 16; 22; 25) according to claim 2, wherein the non-absorbent fibres have a coarseness of 2 to 7 dtex or 3.5 to 7 dtex, or 5.5 to 7 dtex.
5. Absorbent product (8; 12, 16; 22; 25) according to any of claims 1 to 4, wherein the absorbent fibres have a coarseness of 1.1 to 7 dtex or 1.2 to 3 dtex.

6. Absorbent product (8; 12, 16; 22; 25) according to any of the preceding claims, wherein the nonwoven material (1) comprises spunbond, air laid, wet laid, carded, electro spun or meltblown nonwoven, or any combination thereof.
- 5 7. Absorbent product (8; 12, 16; 22; 25) according to any one of the preceding claims, wherein the nonwoven material (1) has a basis weight from 8 to 80 g/m².
8. Absorbent product (8; 12, 16; 22; 25) according to any one of the preceding claims, wherein the thickness of the nonwoven material (1) is from 0.1-3 mm.
9. Absorbent product (8; 12, 16; 22; 25) according to any one of the preceding claims, wherein the absorbent fibres comprise cellulosic fibres.
- 10 10. Absorbent product (8; 12, 16; 22; 25) according to any one of the preceding claims, wherein the non-absorbent fibres comprise synthetic fibres.
11. Absorbent product (8; 12, 16; 22; 25) according to any one of the preceding claims, wherein the absorbent product (8; 12, 16; 22; 25) is a diaper, incontinence protection garment, sanitary napkin or panty liner.
- 15 12. Absorbent product (8; 12, 16; 22; 25) according to any one of the preceding claims, wherein the nonwoven material (1) at least is comprised in a region outside the absorbent body (11).
13. Absorbent product (16; 22; 25) according to any one of the preceding claims, wherein the absorbent product (16; 22; 25) comprises a waist region, hip region, standing
20 gathers, leg openings and belt, and the nonwoven material (1) is comprised in at least one of the waist region, hip region, standing gathers, leg openings and belt.
14. Absorbent product (25) according to claim 13, wherein the belt is attached to the chassis or the belt is 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 being
25 arranged to be in contact with skin.
15. Absorbent product (8; 12; 16; 22; 25) according to any one of the preceding claims, 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).

16. 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 the presence of moisture, than a nonwoven material consisting of non-absorbent fibres having a finer coarseness than 1.8 dtex and absorbent fibres having a finer coarseness than 1 dtex, measured by means of a curve obtained in repeated runs with measurements according to a repeated stick and slip method 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.

17. Absorbent product (8; 12, 16; 22; 25) comprising a chassis (26) having a front and rear panel (17, 19) and an absorbent body (11) having a wetting zone for receiving urine and other bodily fluids, the absorbent product comprising a carded nonwoven material (1) arranged to be in contact with skin of a user during use of the absorbent product (8; 12, 16; 22; 25), wherein the nonwoven material (1) has a basis weight of 18 g/m², is located outside the wetting zone and comprises at least on a skin contacting surface a mixture of non-absorbent fibers comprising polypropylene and absorbent fibres comprising viscose, wherein the absorbent fibres are present in an amount of 2% by weight, based on the total weight of the fibres in the nonwoven material (1), and wherein the non-absorbent fibres have a coarseness of 3.3 dtex and the absorbent fibres have a coarseness of 1.7 dtex.

18. Use of a nonwoven material (1) in an absorbent or hygiene product comprising a chassis (26) having a front and rear panel (17, 19) and an absorbent body (11) having a wetting zone for receiving urine and other bodily fluids to reduce wet friction between the nonwoven material (1) and skin of a user, the nonwoven material (1) being at least being comprised in a region outside the wetting zone and comprising a mixture of non-absorbent and absorbent fibres, wherein the absorbent fibres are present in an amount of 2-10% by weight, based on the total weight of the fibres in the nonwoven

material (1), and wherein the non-absorbent fibres having a coarseness of 3.5 to 10 dtex and the absorbent fibres have a coarseness of from 1 to 10 dtex.

19. Use according to claim 18, wherein the nonwoven material (1) is used in an absorbent product (8; 12; 16; 22; 25) chosen from a diaper, incontinence protection garment,
5 sanitary napkin or panty shield.

20. Use according to claim 17, wherein the nonwoven material (1) is used in substantially non-absorbent regions of the absorbent product (8; 12; 16; 22; 25).

REIVINDICACIONES

1. Producto absorbente (8; 12; 16; 22; 25) que comprende un armazón (26) que tiene un panel frontal y uno posterior (17, 19) y un cuerpo absorbente (11) que tiene
5 una zona humectante para recibir orina y otros fluidos corporales, el producto absorbente comprendiendo 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), caracterizado porque el
10 material no tejido (1) se ubica fuera de la zona humectante y comprende al menos en una superficie que contacta la piel una mezcla de fibras no absorbentes y absorbentes, en donde las fibras absorbentes están presentes en una cantidad de 2-10% en peso, en base al peso total de las fibras en el
15 material no tejido, y en donde las fibras no absorbentes tienen un grosor de 3.5 a 10 dtex y las fibras absorbentes tienen un grosor de 1 a 10 dtex.

2. Producto absorbente (8; 12; 16; 22; 25) que comprende un armazón (26) que tiene un panel frontal y uno
20 posterior (17, 19) y un cuerpo absorbente (11) que tiene una zona humectante para recibir orina y otros fluidos corporales, el producto absorbente comprendiendo un material no tejido (1) colocado para estar en contacto con la piel de un usuario durante el uso del producto
25 absorbente (8; 12; 16; 22; 25), caracterizado porque el

material no tejido (1) se ubica solamente fuera de la zona humectante y comprende al menos en una superficie que contacta la piel una mezcla de fibras no absorbentes y absorbentes, en donde las fibras absorbentes están
5 presentes en una cantidad de 2-10% en peso, en base al peso total de las fibras en el material no tejido (1), y en donde las fibras no absorbentes tienen un grosor de 1.8 a 10 dtex y las fibras absorbentes tienen un grosor de 1 a 10 dtex.

10 3. Producto absorbente (8; 12; 16; 22; 25) de conformidad con la reivindicación 1, caracterizado porque las fibras no absorbentes tienen un grosor de 3.5 a 7 dtex, o 5.5 a 7 dtex.

 4. Producto absorbente (8; 12; 16; 22; 25) de
15 conformidad con la reivindicación 2, caracterizado porque las fibras no absorbentes tienen un grosor de 2 a 7 dtex o 3.5 a 7 dtex, o 5.5 a 7 dtex.

 5. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones 1 a 4,
20 caracterizado porque las fibras absorbentes tienen un grosor de 1.1 a 7 dtex o 1.2 a 3 dtex.

 6. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones precedentes, caracterizado porque el material no tejido (1)
25 comprende no tejido spunbond, producido por vía aérea, por

vía húmeda, por vía carda, electrohilado o soplado, o cualquier combinación de los mismos.

7. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones
5 precedentes, caracterizado porque el material no tejido (1) tiene un peso base de 8 a 80 g/m².

8. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones precedentes, caracterizado porque el espesor del material
10 no tejido (1) es de 0.1-3 mm.

9. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones precedentes, caracterizado porque las fibras absorbentes comprenden fibras celulósicas.

15 10. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones precedentes, caracterizado porque las fibras no absorbentes comprenden fibras sintéticas.

11. Producto absorbente (8; 12; 16; 22; 25) de
20 conformidad con cualquiera de las reivindicaciones precedentes, caracterizado porque el producto absorbente (8; 12; 16; 22; 25) es un pañal, prenda de protección contra incontinencia, toalla femenina o pantiprotector.

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

precedentes, caracterizado porque el material no tejido (1) al menos se comprende en una región fuera del cuerpo absorbente (11).

13. Producto absorbente (16; 22; 25) de
5 conformidad con cualquiera de las reivindicaciones precedentes, caracterizado porque el producto absorbente (16; 22; 25) comprende una región de cintura, región de cadera, pliegues verticales, aberturas para piernas y cinturón, y el material no tejido (1) se comprende en al
10 menos una de la región de cintura, región de cadera, pliegues verticales, aberturas para piernas y cinturón.

14. Producto absorbente (25) de conformidad con la reivindicación 13, caracterizado porque el cinturón se une al armazón o el cinturón se separa del armazón colocado
15 para unirse al armazón, en donde el no tejido se comprende en el cinturón en un lado del cinturón colocándose para estar en contacto con la piel.

15. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones
20 precedentes, 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 tejido (1) se comprende en la hoja superior (9) y/o la hoja posterior (10) del producto absorbente (8;
25 12; 16; 22; 25).

16. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones precedentes, caracterizado porque el material no tejido (1) tiene valores de fricción inferiores en la presencia de
5 humedad, que un material no tejido que consiste de fibras no absorbentes que tienen un grosor más fino que 1.8 dtex y fibras absorbentes que tienen un grosor más fino que 1 dtex, medidos por medio de una curva obtenida en pruebas repetidas con mediciones de acuerdo a un método de pegar y
10 deslizar repetido descrito en la descripción, en donde los valores de fricción en la curva 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
15 segunda inclinación que tiene un coeficiente negativo que ilustra la disminución en los valores de fricción.

17. Producto absorbente (8; 12; 16; 22; 25) que comprende un armazón (26) que tiene un panel frontal y uno posterior (17, 19) y un cuerpo absorbente (11) que tiene
20 una zona humectante para recibir orina y otros fluidos corporales, el producto absorbente comprendiendo un material no tejido (1) producido por vía carda colocado para estar en contacto con la piel de un usuario durante el uso del producto absorbente (8; 12; 16; 22; 25),
25 caracterizado porque el material no tejido tiene un peso

base de 18 g/m², se ubica fuera de la zona humectante y comprende al menos en una superficie que contacta la piel una mezcla de fibras no absorbentes que comprende fibras de polipropileno y absorbentes que comprenden viscosa, en
5 donde las fibras absorbentes están presentes en una cantidad de 2% en peso, en base al peso total de las fibras en el material no tejido, y en donde las fibras no absorbentes tienen un grosor de 3.3 dtex y las fibras absorbentes tienen un grosor de 1.7 dtex.

10 18. Uso de un material no tejido (1) en un producto de higiene o absorbente que comprende un armazón (26) que tiene un panel frontal y uno posterior (17, 19) y un cuerpo absorbente (11) que tiene una zona humectante para recibir orina y otros fluidos corporales para reducir
15 la fricción húmeda entre el material no tejido (1) y la piel de un usuario, el material no tejido (1) siendo al menos comprendido en una región fuera de la zona humectante y comprendiendo una mezcla de fibras no absorbentes y absorbentes, en donde las fibras absorbentes están
20 presentes en una cantidad de 2-10% en peso, en base al peso total de las fibras en el material no tejido (1), y en donde las fibras no absorbentes tienen un grosor de 3.5 a 10 dtex y las fibras absorbentes tienen un grosor de desde 1 a 10 dtex.

25 19. Uso de conformidad con la reivindicación 18,

caracterizado porque 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.

- 5 20. Uso de conformidad con la reivindicación 17, caracterizado porque el material no tejido (1) se utiliza en regiones sustancialmente no absorbentes del producto absorbente (8; 12; 16; 22; 25).