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(71) Applicant (for all designated States except US): **SCA HYGIENE PRODUCTS AB** [SE/SE]; S-405 03 Göteborg (SE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LINDSTRÖM, Asa** [SE/SE]; Sockenvägen 4, S-417 16 Göteborg (SE).
PETRUSSEN, Jan [SE/SE]; Arvid Lindgrens gata 8 B, S-417 26 Göteborg (SE).

(74) Agent: **HOFFMANN . EITLE**; Arabellastrasse 4, 81925 München (DE).

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(54) Title: ABSORBENT ARTICLE COMPRISING ACIDIC SUPERABSORBENT MATERIAL AND PENTANEDIOL

(57) Abstract: The present invention relates to an absorbent article, such as a sanitary napkin, a panty liner, an incontinence protector or a diaper, comprising a topsheet, a backsheet and an absorbent core enclosed between said topsheet and said backsheet, wherein said absorbent core comprises superabsorbent material, characterized in that said superabsorbent material is an acidic superabsorbent material having a pH of 5.5 or less and the absorbent core additionally comprises pentanediol. The combination of pentanediol and acidic superabsorbent material gives a synergistic effect in the suppression of malodours, such as ammonia.



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ABSORBENT ARTICLE COMPRISING ACIDIC SUPERABSORBENT MATERIAL AND
PENTANEDIOL

TECHNICAL FIELD

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The present invention relates to an absorbent article such as a sanitary napkin, a panty liner, an incontinence protector or a diaper comprising an effective odour control system. The present invention relates in particular to such absorbent articles wherein an acidic superabsorbent material and pentanediol, such as 1,5-pentanediol interact synergistically to reduce malodours such as ammonia.

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BACKGROUND OF THE INVENTION

One important area of development in the area of absorbent articles of the above-mentioned type is the control of odourous compounds typically formed after the release of body fluids, especially over a longer period of time. These compounds include, for example, fatty acids, ammonia, amines, sulphur-containing compounds, ketones and aldehydes. They are present as natural ingredients of body fluids or result from degradation processes of natural ingredients such as urea, which are frequently assisted by microorganisms occurring in the urogenital flora.

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Various approaches exist to suppress the formation of unpleasant odours in absorbent articles. WO 97/46188, WO 97/46190, WO 97/46192, WO 97/46193, WO 97/46195 and WO 97/46196 teach for instance the incorporation of odour inhibiting additives or deodorants such as zeolites and silica. However, the absorption of bodily liquids reduces the odour inhibiting capacity of zeolites as soon as these become saturated with water, as mentioned for instance in WO 98/17239.

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A second approach involves the addition of lactobacilli with the intention of inhibiting malodour-forming bacteria in the product. The incorporation of lactobacilli and their favourable effect are disclosed for instance in SE 9703669-3, SE 9502588-8, WO 92/13577, SE 9801951-6 and SE 9804390-4.

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Moreover, it is known from WO 98/57677, WO 00/35503 and WO 00/35505 that partially neutralized superabsorbent materials (acidic superabsorbent materials) counteract the formation of unpleasant odours in absorbent articles. However, acidic superabsorbent

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materials absorb lower amounts of body fluid compared to regular superabsorbent materials (in the following also referred to as superabsorbent polymer, SAP).

Therefore, an ongoing demand exists in the art for effective odour-control systems in absorbent articles. Specifically, it would be desirable to provide an odour-control system that allows reducing the amount of acidic SAP to be used, without affecting the odour reducing properties.

WO 2004/112765 discloses the use of 1,5-pentanediol for inhibiting the growth of antibiotic-resistant bacteria.

WO 96/11572 relates to an antimicrobial composition comprising carboxylic acids and C₃-C₁₀-diols as a mixture. The document mentions the possibility to impregnate tampons and sanitary towels with said composition, however this document does not relate to odour control.

WO 03/057268 relates to superabsorbent compositions, and personal care absorbent articles comprising the compositions. The superabsorbent compositions comprise a superabsorbent material having a glass transition temperature higher than the temperature of use and an elastomer having a glass transition temperature lower than the temperature of use. The superabsorbent material may be derived from a precursor solution comprising a superabsorbent precursor and a non-polymerizable crosslinker which can be selected from the group comprising 1,5-pentanediol. In the working examples of the reference partially hydrolyzed copolymers of isobutylene and maleic anhydride, e.g. a 55 % neutralized isobutylene-maleic anhydride is used as the superabsorbent material. However, these superabsorbent materials are not used in combination with 1,5-pentanediol. Further, does this document not relate to odour control.

It is one technical object of the present invention to overcome deficiencies discussed above in connection with the prior art.

It is one further technical object to provide an absorbent article having an efficient odour control system.

It is one further technical object of the present invention to considerably reduce or

eliminate ammonia formation in absorbent articles.

BRIEF DESCRIPTION OF THE INVENTION

5 The present invention relates to an absorbent article, such as a diaper, panty diaper, panty liner, sanitary napkin or incontinence device *e.g.* incontinence protector, comprising a topsheet, a backsheet and an absorbent core enclosed between said topsheet and said backsheet, wherein said absorbent core comprises acidic superabsorbent material having a pH value of 5.5 or less, and pentanediol.

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The present inventors have found that acidic superabsorbent polymers in combination with pentanediol, interact favourably, preferably synergistically, in the suppression of unpleasant odours.

15 Without wishing to be bound by theory, the mechanism underlying the odour reduction of the present invention is assumed to be as follows. It was found that the ammonia which causes the malodour in absorbent products, such as incontinence products, is formed in the following way:

20 Bacteria + urea $\rightarrow$ NH₃

The present invention is based upon the unexpected finding that pentanediol and acidic superabsorbent materials interact efficiently in suppressing bacterial growth. Moreover, the acidic superabsorbent may also remove the ammonia (NH₃) actually formed, by

25 means of absorption and neutralisation.

The aim of the present invention is to develop an absorbent article where the amount of unwanted bacteria, such as ammonia-producing bacteria does not increase during use and therefore preventing these bacteria to produce ammonia.

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DETAILED DESCRIPTION

Throughout the specification and claims, the use of "comprising" is intended to cover also the more restricting meanings "essentially consisting of" and "consisting".

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As "absorbent article" we understand articles capable of absorbing body fluids such as urine, watery feces, female secretion or menstrual fluids. These absorbent articles include, but are not limited to diapers, panty diapers, panty liners, sanitary napkins or incontinence device such as incontinence protectors (as used for instance by adults).

5

Such absorbent articles have a topsheet, which is preferably liquid-pervious and is facing the wearer's body during use. They further comprise a preferably liquid-impervious backsheet, for instance a plastic film, a plastic-coated nonwoven or a hydrophobic nonwoven and an absorbent core enclosed between the topsheet and the backsheet.

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A suitable topsheet may be manufactured from a wide range of materials such as woven and nonwoven materials (e.g. a nonwoven web of fibers), polymeric materials such as apertured plastic films, e.g. apertured formed thermoplastic films and hydroformed thermoplastic films; porous foams; reticulated foams; reticulated thermoplastic films; and thermoplastic scrims. Suitable woven and nonwoven materials can be comprised of natural fibers (e.g. wood or cotton fibers), synthetic fibers (e.g. polymeric fibers such as polyesters, polypropylene or polyethylene fibers) or from a combination of natural and synthetic fibers. When the topsheet comprises a nonwoven web, the web may be manufactured by a wide number of known techniques. For example, the web may be spun-bonded, carded, wet-laid, melt-blown, hydroentangled, combinations of the above or the like. In accordance with the invention, it is preferred to make use of apertured plastic films (e.g. thermoplastic films) or nonwoven materials based on synthetic fibers, e.g. those made from polyethylene or polypropylene homo- or copolymers and polymer compositions based thereon.

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Optionally, at least one further layer exists between the absorbent core and the topsheet and may be made from hydrophobic and hydrophilic web or foam materials. As "web material" we understand coherent flat fiber-based structures of paper tissue, woven or nonwoven type. The nonwoven material may have the same features as described above for topsheets.

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Specifically, the at least one further layer may contribute to fluid management, for instance in the form of at least one acquisition/ distribution layer. Such structures are taught for instance by US 5,558,655, EP 0 640 330 A1, EP 0 631 768 A1 or WO 95/01147.

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"Foam materials" are also well known in the art and for instance described in EP 0 878 481 A1 or EP 1 217 978 A1 in the name of the present applicant.

The absorbent core, which may be partially or totally surrounded by a core wrap,
5 comprises an acidic superabsorbent material, optionally in admixture with any other absorbent material that is generally compressible, conformable, non-irritating to the wearer's skin and capable of absorbing and retaining liquids such as urine and other body exudates.

10 Examples for other absorbent materials include a wide variety of liquid-absorbent materials commonly used in disposable diapers and other absorbent articles such as comminuted wood pulp, which is generally referred to as air felt or fluff, as well as creped cellulose wadding; chemically stiffened, modified or cross-linked cellulosic fibers; melt
15 blown polymers, including co-form; tissue, including tissue wraps and tissue laminates, absorbent foams, absorbent sponges, non-acidic superabsorbent polymers (such as superabsorbent fibers or particles), absorbent gelling materials, or any other known absorbent materials or combinations of materials.

The term "superabsorbent material", often abbreviated "SAP", is well known in the art and
20 designates water-swelling, water-insoluble materials capable of absorbing the multiple of their own weight in body fluids. Preferably, the superabsorbent material is capable of absorbing at least about 10 times its weight, more preferably at least about 15 times its weight, in particular at least about 20 times its weight in an aqueous solution containing
25 0.9 wt.-% of sodium chloride (under usual measuring conditions where the superabsorbent surface is freely accessible to the liquid to be absorbed). To determine the absorption capacity of the superabsorbent material, the standard test EDANA WSP 241.2 can be used.

The superabsorbent material may be in any form suitable for use in absorbent articles
30 including particles, fibers, flakes, spheres and the like, the particle form being preferred.

The acidic superabsorbent material having a $\text{pH} \leq 5.5$ according to the present invention is oftentimes simply referred to as acidic superabsorbent material (SAP), hereinafter. Acidic SAPs are based on homo- or copolymers comprising at least one polymerizable
35 unit having an acidic group (e.g. a carboxylic acid group or a sulfonic acid group) such as

methacrylic acid, acrylic acid, maleic acid, vinylsulfonic acid. The corresponding polymers include, but are not limited to poly(meth)acrylic acids, ethylene maleic anhydride copolymers, polymers and copolymers of vinylsulfonic acids, polyacrylates, acrylic acid grafted starch and isobutylene maleic anhydride copolymers. These polymers are preferably crosslinked to render the materials substantially water insoluble. According to one preferred embodiment of the present invention, the superabsorbent material is a crosslinked homo- or copolymer comprising (meth)acrylic acid units, for instance of the type disclosed in EP 0 391 108 A2.

10 The acidic superabsorber has preferably a pH value of 3.0 to 5.5, more preferably 3.5 to 5.3 and most preferably 4.1 to 5.2. Thereby, the pH is measured using the standard test EDANA WSP 200.2.

15 Unlike standard SAPs having a pH which lies e.g. in a range of 5.8 or more, the acidic SAPs to be used in the present invention have a pH of 5.5 or less, with the preferred ranges as defined in the preceding paragraph.

20 There are at least two ways of manufacturing acidic SAP. One way is to add an acid, e.g. citric acid, to a standard SAP, thereby reducing the pH. Another method is to maintain a low degree of neutralisation. A standard SAP has a high percentage (typically at least 70%) of the acidic groups neutralised under formation of alkali metal salts. In contrast thereto, acidic SAPs manufactured according to this method have a lower degree of neutralisation, typically 15 to 60%. The degree of neutralisation and pH strongly correlate which implies that the acidity of the SAP can be controlled by the degree of neutralisation.

25 In view of the above, it is also preferred that the absorbent core comprising the acidic superabsorbent has a pH value of 3.0 to 5.7, more preferably 3.5 to 5.5, in particular 4.1 to 5.4 after wetting with synthetic urine.

30 As non-acidic superabsorbent material (also designated in the present specification as standard superabsorbent material) we understand superabsorbent materials of the above described type showing a pH of e.g. 5.8 or more. Non-acidic SAPs comprising polymerizable units with acidic groups preferably have a neutralization degree of at least 70%.

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The fibers present in the absorbent core are preferably also capable of absorbing body liquid as is the case for hydrophilic fibers. Most preferably the fibers are cellulosic fibers such as woodpulp fluff, cotton, cotton linters, rayon, cellulose acetate and the like, the use of cellulosic fluff pulp being preferred. The cellulosic fluff pulp can be of mechanical or chemical type, the chemical pulp being preferred.

In the absorbent core and, if applicable, each layer thereof, the total amount of superabsorbent material (of acidic and optionally non-acidic type) is preferably 10 to 70 wt.-%, more preferably 20 to 65 wt.-%, in particular 30 to 60 wt.-%, for instance 30 to 50 wt.-%, based on the weight of the entire mixture of fibers and superabsorbent materials (without the pentanediol according to the present invention).

The weight ratio of acidic SAP/non-acidic SAP is not particularly restricted (e.g. 5/95 to 95/5, 10/90 to 90/10, 20/80 to 80/20), even though it would appear that higher amounts of acidic SAP seem to enhance the effect of the present invention. Accordingly, weight ratios of acidic SAP/non-acidic SAP of 100/0 to 50/50 (e.g. 95/5 to 60/40, 90/10 to 70/30) can be preferably selected depending on the properties to be achieved.

According to a preferred embodiment, the absorbent core comprises at least one layer comprising a mixture of fibers and acidic SAP, pentanediol and optionally non-acidic SAP.

It was unexpectedly found by the present inventors that pentanediols interact with acidic SAP to provide a very efficient odour control system. As used in the present specification, "pentanediol" is intended to mean a pentane molecule which is substituted with two hydroxy (OH) groups. The pentane substituted with the two hydroxy groups is preferably a linear pentane, i.e. n-pentane. The specific kind of pentanediol for use in the present invention is not specifically limited in kind. It may for instance be 1,2-, 1,4-, 1,5- and 2,4-pentanediol. Preferably, it is 1,5- or 1,2-pentanediol, most preferably 1,5-pentanediol. If the respective pentanediol exists in different stereoisomeric forms, these are also covered by the present invention. For instance, in the case of 2,4-pentanediol, the (R,R)- and the (S,S)-isomers are covered by the term "pentanediol" as used herein. In the present invention, the pentanediol may also be present in the absorbent core as a mixture of several kinds thereof.

A preferred lower weight limit of pentanediols seems to be at least 0,7g per g dry acidic SAP. Herein the term "dry" used in relation to acidic SAP is to be understood such that no water has been added to the acidic SAP and that the only water present in the acidic SAP is the unavoidable residual water from manufacturing. The amounts of residual water is typically below 5 weight-% of the total weight of the acidic SAP and maximum 8 weight-% of the total weight of the acidic SAP. The amount of residual water is measured with the standard test EDANA WSP 230.2.(05). More preferably, the pentanediol is present in amounts of at least 1,7g and 2,0g per g acidic SAP, even more preferably at least 2,2g. According to the most preferred embodiment, the amount of the pentanediol is at least 2,35g pentanediol per g dry acidic SAP. There is no specific upper limit, even though for economic reasons, a point may be reached where it may no longer be useful to further increase the pentanediol content, for instance to values of 2,75g pentanediol per g acidic SAP or higher, if this is not accompanied by an enhanced odour suppression. A preferred lower weight limit of the dry acidic SAP seems to be 10 weight-% of the total weight of the absorbent core. More preferably the acidic SAP is present in amounts of at least 15 weight-% of the total weight of the absorbent core. For instance, when 40% acidic SAP is present in the absorbent core, the amount of the pentanediol may be in the range of 28 to 110 weight percent in relation to the dry absorbent core i.e. if the weight of the absorbent core is 100g, the amount of the pentanediol added to the absorbent core is 28 to 110g.

In a preferred embodiment, the pentanediol is present in the absorbent core in the form of individual free molecules, *i.e.* as non-covalently bound molecules. This is different *e.g.* from WO 03/057268 where 1,5-pentanediol acts as a non-polymerizable crosslinker and is as such incorporated in the polymer network of the superabsorbent material. The preferred presence of the pentanediol as non-covalently bound molecules in the absorbent core, does not preclude other interactions of the pentanediol molecules, such as ionic or hydrogen bonding interactions. The use of pentanediol in the form of non-covalently bound molecules may be advantageous since the interaction sites for the odorous compounds are reduced if pentanediol stays bound in the structure after an insult of bodily liquids has occurred. If pentanediol was covalently bound to the superabsorbent polymers beforehand, this would also decrease the possibility of easily concentrating the pentanediol in certain areas of the absorbent core. A further advantage, if the absorbent core also comprises pulp or non-acidic SAP, is that the pentanediol may be spread all over both the SAP and the pulp which reduces the risk of bacterial growth on the non-acidic parts of the core.

The present invention is also not subjected to any limitations regarding the technique of incorporating the pentanediol compound into the absorbent core. Dripping onto or spraying a solution of pentanediol or dipping the absorbent core in a solution of pentanediol are preferred but the pentanediol compound could also be applied to the absorbent core in solid form, *e.g.* as granules or powder.

For instance, it is conceivable to treat the acidic superabsorbent material, optionally in admixture with cellulosic fibres and/or non-acidic superabsorbent material present in the absorbent core, with a solution of the pentanediol compound before, during or after formation of the absorbent core from said absorbent materials. It is further also conceivable to treat the acidic superabsorbent material, if applicable, before, during or after admixture with other absorbent materials.

According to one embodiment, a solution of the pentanediol compound is sprayed directly onto the acidic superabsorbent before the formation of the absorbent core. This is an especially preferred and effective embodiment since it avoids the extra step of spraying the pentanediol compound solution when manufacturing the absorbent article.

One technique of achieving incorporation of the pentanediol compound also involves treating an already formed absorbent core comprising acidic superabsorbent material, optionally in admixture with cellulosic fibres and/or non-acidic superabsorbent material with a solution of the pentanediol, in particular the 1,5-pentanediol solution.

In a preferred application technique, the solution of the pentanediol compound, in particular 1,5-pentanediol, is sprayed on one or both sides of the absorbent core, or on one or both sides of the individual layers constituting the same.

In the alternative, the fibers that are present in the absorbent core, preferably cellulosic fluff pulp can be treated with a solution of pentanediol, in particular 1,5-pentanediol. This can be done prior to or during admixture of the fibers with the acidic SAP. For instance, a solution of the pentanediol is sprayed onto the fibers, most preferably onto the cellulosic fluff pulp sheets as obtained from the manufacturer. Alternatively, the fibers, *e.g.* the cellulosic fluff pulp sheets are dipped in the pentanediol solution and thereafter said

cellulosic fluff pulp sheets are dried, and the acidic SAP is subsequently added during or after core formation.

5 The solvent used for the solution of the pentanediol, in particular 1,2-pentanediol or 1,5-pentanediol can be water or a polar organic solvent such as ethanol. To facilitate the removal of the solvent following the treatment of the absorbent core with the pentanediol solution, the solvent preferably is a volatile organic solvent, such as ethanol. Preferably, the pentanediol is present in the solvent in a relatively high concentration, preferably 50 to 80 wt.-%. The use of concentrated solutions of the pentanediol in a solvent ensures that
10 the absorption capacity of the superabsorbent material is not impaired more than necessary. Of course mixtures of the above solvents can also be used.

The backsheet prevents the exudates absorbed by the absorbent layer and contained within the article from soiling other external articles that may contact the absorbent article,
15 such as bed sheets and undergarments. In preferred embodiments, the backsheet is substantially impervious to liquids (e.g., urine) and comprises a laminate of a nonwoven and a thin plastic film such as a thermoplastic film having a thickness of about 0.012 mm to about 0.051 mm. Suitable backsheet films include those manufactured by Tredegar Industries Inc. of Terre Haute, Ind. and sold under the trade names X15306, X10962, and
20 X10964. Other suitable backsheet materials may include breathable materials that permit vapors to escape from the absorbent article while still preventing exudates from passing through the backsheet. Exemplary breathable materials may include materials such as woven webs, nonwoven webs, composite materials such as film-coated nonwoven webs, and microporous films.

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The above elements of an absorbent article can be assembled, optionally together with other typical elements of absorbent articles in a manner known in the art.

EXAMPLES

30

TEST METHODS

A) pH of the absorbent core

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The pH of the absorbent core can be measured very precisely with the following method

involving the preparation of a test absorbent core and pH measurement using the same.

Method 1: Preparation of absorbent cores for test

- 5 Absorbent cores were punched out of an absorbent core produced in a pilot plant. A standard method of mat forming a core was used in the production of the core in the pilot plant. The absorbent core consisted of a homogenous mixture of fluffed pulp and superabsorbent material. The absorbent core was compressed to a bulk of about 8-10 cm³/g. The size of the punched cores was 5 cm in diameter, the weight of the same about
10 1.16 g.

Method 2: Measurement of pH in an absorbent core

- 15 An absorbent core having a diameter of approximately 50 mm was prepared according to Method 1. A predetermined amount of Test liquid 1 was added, 16 ml to all samples, whereafter the absorbent core was left to swell for 30 minutes. Thereafter, pH was measured on the liquid squeezed out of the samples using a surface electrode, Flat-bottomed, type Single Pore Flat, Hamilton.

- 20 Test liquid 1 (referred to in Method 2):
Synthetic urine containing the following substances: HCl, NaCl, MgSO₄, KH₂PO₄, Na₂HPO₄, NH₂CONH₂, CaSO₄, K₂SO₄, (NH₄)₂HPO₄. The pH in this composition is 5.5 - 6.0.

- 25 The test liquid to be used is 16 ml synthetic urine (as defined above) for a single core absorbent body.

EXAMPLE 1

- 30 Circular test absorbent cores having a weight of 1.16 g and a diameter of 5 cm were punched out of an absorbent product. The absorbent core consisted of fluff pulp and superabsorbent material. The fluff pulp used was 0.69 g Weyerhaeuser pulp NB416 and the superabsorbent 0.47 g BASF M7125 (pH 4.9 ± 0.2, commercially available).
To the absorbent core 1,6 ml of a 70 wt.-% solution of 1,5-pentanediol (available from
35 Ambria Dermatology) was added by either dripping the solution onto the surface (on one

side) or dipping one side of the core into the solution. This led to a concentration of about 96 wt.-% concentrated 1,5-pentanediol in terms of dry absorbent core (about 2,38g concentrated 1,5-pentanediol per g acidic superabsorber). Then, the absorbent body was allowed to absorb 13.0 ml synthetic urine according to Method 3 as described above and was incubated at 35°C.

6h and 8h, respectively, after the absorption of synthetic urine the amount of ammonia developed was measured.

Five measurements were averaged as mean value. The results are shown in Table 1.

Method 3: Measurement of ammonia inhibition in absorbent cores

Absorbent cores were prepared in accordance with Method 1. Test liquid 2 was prepared. Bacteria suspension of *Proteus mirabilis* was cultivated in nutrient broth 30°C overnight. The graft cultures were diluted and the bacterial count was determined. The final culture contained approximately 10^5 organisms per ml of test liquid. The absorbent core was placed in a plastic jar and the Test liquid 2 was added to the absorbent core, whereafter the container was incubated at 35°C, 6 and 8 hours respectively, whereafter samples were taken from the containers using a hand pump and a so called Dräger-tube. The ammonia content was obtained as a colour change on a scale graded in ppm or volume percent.

Test liquid 2:

Sterile synthetic urine to which has been added a growth medium for micro-organisms. The synthetic urine contains mono- and divalent cations and anions and urea and has been prepared in accordance with the information in Geigy, Scientific Tables, Vol 2, 8th ed. 1981 p. 53. The growth medium for the micro-organisms is based on information of Hook- and FSA-media for entero-bacteria. The pH in this mixture is 6.6.

COMPARATIVE EXAMPLE 1

An absorbent core was formed in the same manner as in Example 1 with the difference that the acidic superabsorber was replaced by a standard superabsorber (SXM9405 from Evonik Stockhausen GmbH).

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COMPARATIVE EXAMPLE 2

An absorbent core was formed in the same manner as in Example 1, with the sole exception that a treatment with a solution of pentanediol was not carried out.

10

The results in terms of ammonia formation of Example 1 and Comparative Examples 1 and 2 are shown in the following Table 1.

15

TABLE 1

	sample description	ammonia formation (ppm) 6h	ammonia formation (ppm) 8h
Cex 1	Pulp + 1,5-pentanediol + SAP ¹	66	230
Cex 2	Pulp + SAP ²	160	1000
Ex 1	Pulp + 1,5-pentanediol + SAP ²	21	31

5 ¹ Non-acidic superabsorber (Evonik Stockhausen GmbH SXM9405)

² Acidic superabsorbent material (BASF M7125)

10 The above show that the combined use of acidic superabsorber and pentanediol suppress
the formation of ammonia to a very surprising extent. Considering the fact that a human
can start detecting the smell of ammonia at a concentration of between 30 and 50ppm,
the present invention ensures that the user can wear the absorbent article up to 8h after
use without any ammonia odour being perceived.

CLAIMS

1. Absorbent article, such as a sanitary napkin, a panty liner, an incontinence protector or a diaper, comprising a topsheet, a backsheet and an absorbent core enclosed between said topsheet and said backsheet, wherein said absorbent core comprises superabsorbent material, characterized in that said superabsorbent material is an acidic superabsorbent material having a pH of 5.5 or less and the absorbent core additionally comprises pentanediol.
2. Absorbent article according to claim 1, wherein the pentanediol is in the form of a non-covalently bound molecule.
3. Absorbent article according to claim 1 or 2, wherein the pentanediol is present in an amount of at least 0,7g, preferably at least 1,7g, in particular at least 2,2g per g dry acidic superabsorbent material.
4. Absorbent core according to any of the preceding claims, wherein the acidic SAP is present in an amount of at least 10 weight-%, preferably at least 15 weight-% of the total weight of the absorbent core.
5. Absorbent article according to any of the preceding claims, wherein the pentanediol is added to the core in the form of a solution.
6. Absorbent article according to any of the preceding claims, wherein the absorbent core has a pH value of 3.0 to 5.7, preferably 3.5 to 5.5, in particular 4.1 to 5.4 after wetting with synthetic urine.
7. Absorbent article according to any of the preceding claims, wherein the acidic superabsorbent material has a pH value of 3.0 to 5.5, preferably 3.5 to 5.3, in particular 4.1 to 5.2.
8. Absorbent article according to any of the preceding claims, wherein the acidic superabsorbent material is a crosslinked homo- or copolymer comprising meth(acrylic) acid units.

9. Absorbent article according to any of the preceding claims, wherein the pentanediol is 1,5-pentanediol.

10. Absorbent article according to any of the preceding claims, wherein the absorbent core comprises a mixture of acidic superabsorbent material and fibres.

11. Absorbent article according to claim 10, wherein the fibers are cellulosic fluff pulp.

12. Absorbent article according to claim 11, wherein the cellulosic fluff pulp is treated with the pentanediol.

13. Absorbent article according to any one of the preceding claims, wherein the absorbent core comprises acidic superabsorbent material and non-acidic superabsorbent material.

14. Absorbent article according to claim 13, wherein the total amount of acidic and non-acidic superabsorbent material in the absorbent core is 10 to 70 weight%, based on the weight of the absorbent core (excluding the pentanediol).

15. Absorbent article according to claim 13 or 14, wherein the acidic superabsorbent material in the absorbent core is present in an amount of at least 50 weight% based on the total amount of superabsorbent material.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2008/063653

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61L15/20 A61L15/22 A61L15/28 A61L15/46 A61L15/60
A61L15/42

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61L

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	WO 02/094329 A (BASF AG [DE]; WHITMORE DARRYL L [US]; ENGELHARDT FRIEDRICH [DE]) 28 November 2002 (2002-11-28) page 1, lines 6-15 page 3, line 7 - page 5, line 25 page 6, lines 43-45 page 7, lines 2-5, 36-40 page 8, lines 22-30 page 12, lines 14-22 page 14, lines 9-26 page 15, lines 23-26 page 19, lines 26-47 page 20, lines 43-46 page 28, lines 12-19 page 29, lines 32-34, 45, 46 page 30, lines 19-23 page 31, line 45 - page 32, line 40 page 33, line 41 - page 34, line 36 -/--	1, 4, 6-8, 10, 11, 13-15 2, 3, 5, 9, 12

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

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Date of the actual completion of the international search

4 June 2009

Date of mailing of the international search report

10/06/2009

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

López García, Mónica

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2008/063653

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2008/063653

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