BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [ ] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 12 March 2013

Case Number: T 2142/10 - 3.3.09

Application Number: 97948474.8

Publication Number: 941274

IPC: C08J 3/075, C08L 101/14, A61L 15/60

Language of the proceedings: EN

Title of invention:
Absorbent composition

Patent Proprietor:
Kimberly-Clark Worldwide, Inc.

Opponent:
The Procter & Gamble Company

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 83, 123(2), 123(3)

Keyword:
"Main request (added subject-matter)"
"Auxiliary request 1 (allowable)"

Decisions cited:
-

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 2142/10 - 3.3.09

D E C I S I O N
of the Technical Board of Appeal 3.3.09
of 12 March 2013

Appellant: (Opponent)
The Procter & Gamble Company
One Procter & Gamble Plaza
Cincinnati, Ohio 45202 (US)

Representative:
Briatore, Andrea
Procter & Gamble Service GmbH
Sulzbacher Straße 40-50
D-65824 Schwalbach am Taunus (DE)

Respondent: (Patent Proprietor)
KIMBERLY-CLARK WORLDWIDE, INC.
401 North Lake Street
Neenah, WI 54956 (US)

Representative:
Zimmermann & Partner
Postfach 330 920
D-80069 München (DE)

Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 6 August 2010 rejecting the opposition filed against European patent No. 941274 pursuant to Article 101(2) EPC.

Composition of the Board:

Chairman: W. Sieber
Members: N. Perakis
K. Garnett

Summary of Facts and Submissions

I. Mention of the grant of European patent No. 0 941 274 in the name of Kimberly-Clark Worldwide, Inc., based on International application No. PCT/US1997/021426, was published on 3 December 2008 (Bulletin 2008/49). The patent was granted with 22 claims, claim 1 reading as follows:

"1. An absorbent composition comprising a mixture of:

(a) an acidic water-swellable, water-insoluble polymer; and
(b) a basic water-swellable, water-insoluble polymer,

wherein a molar ratio of the acidic polymer to the basic polymer is 1:4 < acid/base ≤ 4:1,

characterized in that

the acidic polymer comprises acidic functional groups and has at least 50 molar percent of the acidic functional groups in the free acid form, and has a pK_a between 2 to 12,
the basic polymer has a pK_b between 2 to 12, and
the absorbent composition exhibits a Free Swell FS value that is at least 15 grams per gram of absorbent composition and a Time to Reach 60 Percent of Free Swell Capacity value of at least 5 minutes."

II. An opposition was filed by the Procter & Gamble Company requesting revocation of the patent in its entirety, relying on Article 100(a) EPC (lack of novelty and inventive step), Article 100(b) and Article 100(c)EPC.

The following documents were *inter alia* cited by the opponent:

D1: WO 96/17681 A1;
D2: WO 96/15180 A1; and
D4: WO 96/15163 A1.

III. By its decision announced orally on 27 July 2010 and issued in writing on 6 August 2010 the opposition division rejected the opposition.

IV. On 14 October 2010 the opponent (hereinafter: the appellant) filed an appeal against the decision of the opposition division and paid the appeal fee on the same day. The appellant requested the complete revocation of the patent. The statement setting out the grounds of appeal was filed on 16 December 2010.

V. The patent proprietor (hereinafter: the respondent) filed its observations to the appeal with the letter dated 18 April 2011. The respondent requested that the appeal be dismissed, alternatively that the patent be maintained on the basis of the enclosed auxiliary requests 1 to 6.

For the purposes of this decision only auxiliary request 1 is of relevance. Claim 1 of auxiliary request 1 differs from claim 1 as granted only in that the molar ratio of the acidic polymer to the basic polymer is now amended to 2:1 to 1:2.

VI. Following the summons to oral proceedings pursuant to Rule 115(1) EPC the appellant indicated in its letter

dated 12 February 2013 that it would not be represented at the oral proceedings before the board but that it maintained all arguments filed with the statement of grounds of appeal.

VII. On 12 March 2013 oral proceedings were held in the absence of the appellant.

VIII. The relevant arguments put forward by the appellant in writing may be summarised as follows:

Added subject-matter

- The subject-matter of claim 1 of all requests extends beyond the content of the PCT application as filed as regards the definition of component (b) as "a water-swellable water-insoluble polymer".

- Claim 1 of the main request is further objectionable having regard to the molar ratio of 1:4 < acid/base ≤ 4:1. There was no basis in the application as filed for excluding the value "1:4" as now done in the claimed range.

Sufficiency of disclosure

- The claimed invention is insufficiently disclosed because the FS parameters cannot be reliably measured by following the instructions of the patent in suit. Furthermore the patent does not contain any indication as to how to obtain a material which provides the desired FS values other than to use the specific materials shown in the examples.

Novelty

- The claimed subject-matter lacks novelty in view of D1, which discloses the combination of (i) an acidic polymer having free acid functional groups and (ii) a basic polymer having free basic functional groups. Carboxylic acids (i.e. weak acids) are strongly preferred. Therefore, in order to arrive at the claimed subject-matter one would simply have to make a selection from one single list, namely the list of the basic groups. As far as the Free Swell parameter values is concerned it has not been shown whether these parameters are the inevitable result of the other features in the claim or confer any limiting effect on the scope of the patent.

Inventive step

- The claimed subject-matter lacks an inventive step in view of D1, considered as the closest state of the art. The skilled person starting from this document and looking for an absorbent composition with reduced absorption speed while maintaining high absorption capacity would know, using his common general knowledge, that the two polymers of D1 must be weakly acidic and weakly basic in order to slow down the reaction kinetics and consequently the absorption rate of the absorbent.

IX. The relevant arguments put forward by the respondent orally and in writing may be summarised as follows:

Added subject-matter

- The claimed subject-matter is disclosed in the application as filed. Component (b) is defined on page 12 and discloses that the basis material is

suitably a water-swellable, water-insoluble polymer (first and second full paragraphs).

- Regarding the feature of the acid/base molar ratio "1:4 < acid/base ≤ 4:1", it results from the original disclosure of "about 4:1 to about 1:4" by removing the term "about". The exclusion of the value "1:4" from the range is supported by sample 3/12 in the first line of table 5 (having a molar ratio of 1:4), which was already marked as an example not according to the invention in the description as filed.

Sufficiency of disclosure

- The test method used to measure the FS parameters does not require sieving of the sample. The particle size is not a feature of the claim. Furthermore, the data given in table 3 demonstrate that, although the particle size influences the FS parameters to some extent, samples with particle sizes identified by the appellant and falling outside the range of 300 to 600 µm provide values for the FS parameters falling within the claimed range.

- The patent application discloses materials suitable for the claimed absorbent composition. For example, page 12, first full paragraph, discloses suitable basic water-swellable, water-insoluble polymers, and page 13, first paragraph, discloses suitable acidic water-swellable, water-insoluble polymers.

Novelty

– The claimed subject-matter is a selection invention over D1 in view of the restricted ranges for pK_a and pK_b.

Inventive step

– The claimed subject-matter involves an inventive step. D1 should be considered to represent the closest state of the art. The claimed absorbent composition differs from the composition of D1 both structurally (the specific pK_a and pK_b values) and functionally (the FS parameters). The skilled person starting from D1 and looking for an absorbent composition which provides absorbent capacity over the entire absorbent structure but without reducing the overall absorbent capacity does not find in the state of the art any hint towards the claimed solution. Neither the technical problem nor its solution is addressed, taught or suggested by D1 or by any other cited document (D2 and D4).

X. The appellant (opponent) requested that the decision under appeal be set aside and that the European patent No. 0 941 274 be revoked.

XI. The respondent (patent proprietor) requested that the appeal be dismissed, alternatively that the decision under appeal be set aside and that the patent be maintained on the basis of auxiliary request 1 filed with its letter dated 18 April 2011.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. Added subject-matter under Article 100c) EPC

According to the appellant claim 1 as granted contains two elements which extend the claimed subject matter beyond the application as filed (reference was made to three elements but only the following two have been identified).

2.1 Claim 1 as granted (point I above) requires that component (b) of the mixture is "a basic water-swellable, water-insoluble polymer".

2.1.1 According to the appellant dependent claim 9 as filed

"9. The absorbent composition of Claim 8 wherein the basic material is a basic water-swellable, water-insoluble polymer."

is not a proper basis for defining component (b) as a basic water-swellable, water-insoluble polymer in view of the dependency of claim 9 on claim 8. Claim 8 as filed specifies that the basic material has to be selected from a closed list of compounds. Because of the dependency of claim 9 as filed all features of claim 8 as filed should have been introduced in claim 1. This was, however, not the case.

2.1.2 The board does not agree with the appellant. In fact, the contested feature is disclosed in the general part of the application as filed, namely on page 9, lines 2 to 6:

"In general, basic, water-swellable, water-insoluble polymers useful in the absorbent composition will be weakly basic in nature".

The skilled person would directly and unambiguous derive the contested feature from this passage. Thus the objection of the appellant regarding this feature is not justified.

2.2 The appellant's second objection against claim 1 as granted is directed to the feature that the molar ratio of the acidic polymer to the basic polymer is "1:4 < acid/base ≤ 4:1". In particular, there was no basis in the application as filed for excluding the value "1.4" from the claimed range.

2.2.1 The board observes that page 14, line 11 of the application as filed discloses that the molar ratio of the acidic polymer to the basic material is "suitably from about 4:1 to about 1:4". This disclosure does not provide any support for excluding the lower end of this range, namely the ratio of 1:4.

2.2.2 During examination (see letter dated 28 April 2005) the respondent had also relied on page 14, line 11 in conjunction with "*Sample 3/12" in table 5, first line. The footnote (*) explains that sample 3/12 having a molar ratio of 0.25/1, ie 1:4, is not an example of the invention, presumably because it does not have the

required Free Swell Capacity of at least 15 grams per gram of absorbent.

2.2.3 However, the board notes that sample 3/12 relates to the mixture of a specific polyacrylic acid (see page 20, lines 17 to 25) and a specific chitosan (see page 21, lines 14 to 24). If this example were to be excluded from the claimed subject-matter, then all of the features of the specific composition of "sample 3/12" would have to be excluded from the claimed subject-matter and not selectively one of them - in the present case the molar ratio 1:4. Apart from this example there is, however, no teaching in the application as filed that a molar ratio of 1:4 generally has to be excluded from the claimed subject-matter. Thus there is no basis in the application as filed to generalise the information provided in the context of the specific sample 3/12, and the skilled person on the basis of his general technical knowledge would therefore not directly and unambiguously derive from the application as filed a molar ratio range as required in claim 1 as granted.

2.2.4 Hence the subject-matter of granted claim 1 is considered to extend beyond the content of the application as filed (Article 100(c) EPC) with the consequence that the main request is not allowable.

Auxiliary request 1

3. Amendments under Articles 123(2) and (3) EPC.

3.1 The subject-matter of claim 1 of auxiliary request 1 differs from that of the main request only in that the

range for the molar ratio of the acid polymer to the basic polymer has been restricted to 2:1 to 1:2.

This amendment is support by page 14, line 11, in the application as filed. Consequently, claim 1 of auxiliary request 1 satisfies the requirements of Article 123(2) EPC.

3.2 Since the amended range is narrower than the range in claim 1 as granted, claim 1 of auxiliary request 1 also satisfies the requirements of Article 123(3) EPC.

4. Sufficiency of disclosure

The objections of the appellant concern the parameters Free Swell Capacity value and Time to Reach 60% of the Free Swell Capacity value.

4.1 Firstly, the appellant argued that the patent did not provide a clear and unreliable method for measuring the FS value parameters, even when following the instructions in the patent in suit.

4.1.1 With regard to this objection, the board refers to paragraphs [0063] to [0068] of the patent in suit, which disclose the method which must be used to measure the Free Swell value. This part of the description contains the controversial disclosure (paragraph [0067], first sentence):

"To carry out the test, a 0.160 gram sample of an absorbent material sample, which has ***typically*** *been sieved to a particle size between 300 and 600 microns, is placed into the sample cup".*(emphasis added)

As correctly pointed out by the appellant the word "typically" indicates that the sieving step is optional. Indeed the particle size is not a feature of claim 1 and the sample does not have to undergo a sieving step before the measurement of the FS parameters. This is confirmed by the data given in table 3, which demonstrate that the particle size influences the Free Value Swell and Time to Reach 60% of Free Swell Capacity to some extent, but that particle sizes outside the range of 300 to 600 µm work well. Thus materials with a particle size between 150 and 300 µm and between 600 and 850 µm have FS parameters as required by claim 1.

4.1.2 Thus the board considers that the patent in suit contains sufficient evidence that the FS parameters can be reliably measured by following the instructions of the patent in suit.

4.2 Secondly, the appellant argued that even assuming that the FS parameters for a given material could be reliably measured, the patent in suit does not contain any indication on how to obtain a material which provides the desired FS values other than to use the specific materials shown in the examples.

4.2.1 The board does not agree with the appellant. The patent in suit discloses at length on page 4 to 6 general principles regarding the preparation of suitable acidic and basic water-swellable, water-insoluble polymers. Furthermore, the FS values can be modified via the molar ratio of the acidic/basic absorbents. In particular the data of table 5 show the influence of the molar ratio on the FS values.

Lastly, as pointed out above, also the particle size influences the FS values to a certain degree. As the appellant correctly pointed out, small particles will absorb a fluid very quickly, while larger particles will absorb the fluid much more slowly.

4.2.2 Consequently, the patent in suit contains the necessary information for the skilled person to be able to identify materials satisfying the FS parameters.

5. Novelty

5.1 The novelty of claim 1 was objected to only on the basis of the disclosure of D1. D1 (claim 1) discloses a superabsorbent material which comprises the combination of an anionic superabsorbent polymer (corresponding to the acidic polymer of the claimed invention) and a cationic superabsorbent polymer (corresponding to the basic polymer of the claimed invention). Each of these polymers is water-swellable and water-insoluble since they are disclosed to be superabsorbent. The anionic superabsorbent has preferably 50-100% of its functional groups in free acid form and the cationic superabsorbent has preferably 50-100% of its functional groups in free base form (claim 2). The ratio of anionic to cationic superabsorbent is in the more preferable range of 2:1 to 1:2 based on monomer units, each monomer unit having one functional group therein (claim 22).

5.2 Nevertheless, D1 does not explicitly disclose the combination of an anionic superabsorbent having a pK_a between 2 to 12 and a cationic superabsorbent having a pK_b between 2 to 12.

5.2.1 Disclosed anionic functional groups are sulphonic, sulphate, phosphate and preferably carboxylic groups (claim 3). Disclosed cationic functional groups are primary, secondary tertiary and preferably quaternary ammonium groups (claim 8). D1 does not disclose or suggest a specific a pK_a or a pK_b range, and while some of the disclosed polymers/ functional groups fall within a a pK_a or a pK_b range of 2 to 12, others do not.

The general disclosure of D1 therefore covers a large number of polymers or copolymers of both kinds (acidic and basic) showing different pK_a or pK_b values (outside and inside of the range of 2 to 12). Consequently, the skilled person could arrive at compounds (a) and (b) as required in claim 1 only by selecting from each of the lists those anionic and cationic polymers, whose pK_a and pK_b value lies within the range of 2 to 12. There is, however, no hint towards such a selection.

5.2.2 As regards the preferred embodiments of the disclosure of D1, the board observes that the preferred acid functional group of the anionic superabsorbent is a weak acid, namely a carboxyl group, and the preferred basic functional group of the cationic superabsorbent is a strong base, namely a quaternary ammonium group. In the examples, the cationic superabsorbent is (crosslinked) dimethyldiallylammonium hydroxide (DMAOH) (FAI 9 OH^-) and the anionic superabsorber is polyacrylic acid (Favor H^+). Although acrylic acid has a pK_a within the required range, the pK_b of DMAOH is outside the claimed range. Sample 14 of the contested patent shows that DMAOH has a pK_b of smaller than 1 (table 2). This was not contested by the respondent.

5.2.3 Consequently, neither the general teaching nor the preferred embodiments of D1 disclose or suggest the required combination of pK_a and pK_b values.

5.3 Furthermore, D1 does not disclose the features relating to the Free Swell SF value and to the Time to Reach 60 Percent of Free Swell Capacity value of at least 5 minutes. These parameters represent a functional limitation of the claimed subject-matter and are not necessarily the inevitable consequence of the other features of claim 1. This is clear from the data presented in table 3 of the patent in suit, which show that the FS values are influenced by the particle size, a parameter which is not required by claim 1.

5.4 In view of the above considerations the subject-matter of claim 1 of auxiliary request 1 is novel over D1.

6. Inventive step

6.1 Closest prior art

The board in agreement with the respondent considers D1 to represent the closest state of the art. This document lies in the same technical field as the patent in suit, namely superabsorbent technology, and aims at the improvement of the properties of such a superabsorbent. Compared with the other cited prior art, namely D2 and D4, D1 has the most technical features in common with the claimed subject-matter, since it is the only document which combines two superabsorbent polymers, one acidic and the other basic. Thus D1 constitutes the most promising starting point for the assessment of inventive step.

6.2 Technical problem

6.2.1 According to the patent in suit (paragraph [0005]) one important characteristic of the superabsorbent materials available before its priority date was that they absorbed very rapidly the liquid that came into contact with them. In doing so, such superabsorbent materials may swell and block the flow of the liquid throughout the rest of the absorbent structure, possibly resulting in the liquid leaking out of the absorbent structure in the area of the localised insult location. Such an absorption characteristic is not desirable if the liquid needs to be distributed throughout the entire volume of the absorbent structure so that the absorbent capacity of the entire structure is utilised.

The patent in suit (paragraph [0006]) discloses that several methods were known before the filing date of the patent in suit to slow down the liquid-absorption rate of a relatively fast-rate-absorbing superabsorbent material. For example, it was known to coat the fast rate-absorbing superabsorbent material with a material that was non-absorbent and/or hydrophobic. Such coating materials tend, however, to temporarily shield the underlying superabsorbent material from any liquid and thus delay the absorption of the liquid by the superabsorbent material.

6.2.2 In the light of D1 the respondent saw the problem underlying the claimed invention in the provision of an absorbent composition which provides absorbent capacity over the entire absorbent structure so that the

absorbent capacity of the entire structure is used without reducing the overall absorbent capacity.

6.2.3 As a solution to this problem claim 1 suggests an absorbent composition with the following characterizing features, which distinguish the claimed subject-matter from D1:

- an absorbent composition comprising a mixture of an acidic water-swellable, water-insoluble polymer having a specific pK_a and a basic water-swellable, water-insoluble polymer having a specific pK_b (structural features); and

- the absorbent composition must have certain FS values (functional features).

6.2.4 The board is satisfied that the patent in suit contains sufficient technical evidence to show that the above technical problem has indeed been solved by the measures of claim 1 of auxiliary request 1 (see in particular examples 1 to 7).

6.2.5 The appellant argued that the technical problem was how to reduce the absorption speed while maintaining high absorption capacity. This definition appears to be merely the transposition of the FS parameters of the claim into the formulation of the problem. In fact, such a formulation of the problem focuses merely on the functional features of the claim and already contains the elements of the solution.

6.3 Obviousness

6.3.1 The skilled person, starting from D1 and looking for a superabsorbent composition which provides absorbent capacity over the entire absorbent structure without reduction of the overall absorbent capacity, would not find in the state of the art any motivation to modify the known superabsorbent composition of D1 so that it has the structural and functional features of claim 1 of auxiliary request 1.

The appellant referred in this context to D2 and D4. However, D2 (claims 1-4, 9 and 10; page 4, lines 15-20) discloses a different superabsorbent material based on the combination of an anionic superabsorbent having free acid functional groups with an anion exchanger having free basic functional groups (the anion exchanger is not considered to be a water-swellable superabsorbent). Therefore, even if the skilled person had taken D2 into consideration, he would not have arrived at the superabsorbent composition of claim 1. The same reasoning applies to D4 (claims 1-4, 13 and 14; page 4, lines 22-27) which discloses a superabsorbent material comprising a combination of a cationic superabsorbent having free basic functional groups and a cation exchanger having fee acid functional groups (a cation exchanger is also not considered to be a water-swellable superabsorbent).

6.3.2 The board does not agree with the appellant that the claimed invention would be obvious applying a skilled person's common general knowledge. Although D1 prefers strong basic polymers, a skilled person would understand that, using weakly basic polymer, the reaction kinetic would be slower, as the amount of basic group available at any given instant would be

smaller, with the consequence that also the absorption rate would be slower. In view of the absence of any hint towards the problem to be solved in D1, the analysis of the appellant appears to be based on hindsight.

6.3.3 The board thus concludes that the subject-matter of claim 1 of auxiliary request 1 is not obvious and thus fulfils the requirements of Article 56 EPC.

7. In summary, the subject-matter of claim 1 of auxiliary request 1 is allowable.

8. Dependent claims 2 to 20, which correspond to specific embodiments of the absorbent composition of claim 1 are *mutatis mutandis* allowable.

9. Independent claim 21, which relates to a disposable absorbent product comprising an absorbent structure comprising the absorbent composition of claim 1 is *mutatis mutandis* allowable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent on the basis of:

(a) claims 1 to 21 according to auxiliary request 1 filed with the respondent's letter dated 18 April 2011;

(b) the description pages numbered 2, 4-7 and 9-13 as granted, and 3, 8 and 14 as filed during the oral proceedings of 12 March 2013;

(c) figure 1 as granted.

The Registrar: The Chairman:

M. Canueto Carbajo W. Sieber