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# Datasheet for the decision of 13 July 2006

**Case Number:** T 0170/05 - 3.2.06

**Application Number:** 97913610.8

**Publication Number:** 1018997

**IPC:** A61F 13/00

**Language of the proceedings:** EN

**Title of invention:**
A method of producing an absorbent structure having improved strength properties

**Patentee:**
SCA Hygiene Products AB

**Opponent:**
The Procter & Gamble Company

**Headword:**
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**Relevant legal provisions:**
EPC Art. 83, 84, 123(2), 54, 56

**Keyword:**
"Disclosure - enabling"
"Claims - clarity (yes)"
"Novelty - (main request - no)"
"First and second auxiliary request: Novelty - (yes)"
"Inventive step - (no)"
"Third and fourth auxiliary request: not admitted, late-filed, not prima facie allowable"

**Decisions cited:**
-

**Catchword:**
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

**Case Number:** T 0170/05 - 3.2.06

# D E C I S I O N
**of the Technical Board of Appeal 3.2.06**
**of 13 July 2006**

**Appellant:** (Patent Proprietor)
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**Decision under appeal:**
**Decision of the Opposition Division of the European Patent Office posted 8 December 2004 revoking European patent No. 1018997 pursuant to Article 102(1) EPC.**

**Composition of the Board:**

**Chairman:** P. Alting van Geusau
**Members:** G. L. De Crignis
K. Garnett

## Summary of Facts and Submissions

I. European Patent No. 1 018 997, granted on application No. 97 913 610.8, was revoked by the opposition division by decision posted on 8 December 2004. The revocation was based on the finding that although (a) the patent in suit was disclosed in a manner sufficiently clear and complete for it to be carried out by a skilled person (Article 83 EPC), (b) the subject-matter of claim 1 of the main request met the requirements of Article 123(2) EPC, and (c) was novel over the disclosure in

D1 EP-A-0091821

D8 WO-A-96/37650 and

D9 EP-A-0463716,

it did not involve an inventive step with regard to D8 alone or in combination with the general knowledge of the skilled person. Furthermore, the subject-matter of claim 1 of the fifth auxiliary request did not involve an inventive step for the same reasons as applied to the subject-matter of claim 1 of the main request. The subject-matter of claim 1 of the sixth and seventh auxiliary requests did not meet the requirements of Article 123(2) EPC. (The fifth to seventh auxiliary requests were the only auxiliary requests maintained.)

II. The appellant (patentee) filed a notice of appeal against this decision on 7 February 2005, and simultaneously paid the appeal fee. On 6 April 2005 the statement of grounds of appeal was filed, accompanied by new sets of claims comprising a main request and three auxiliary requests.

III. With a communication dated 21 February 2006, accompanying the summons to oral proceedings, in relation to the feature "so that the superabsorbents function as a binder in the fibre structure" introduced in claim 1 of all requests, the Board questioned both its clarity as well as its contribution to overcome the objections leading to revocation of the patent. With respect to sufficiency of disclosure as well as with regard to the assessment of inventive step, the Board indicated that the meaning of "moistened region" and the achievement of enhanced tensile strength needed further consideration. Attention was drawn to the examples disclosed in

D2 US-A-5,516,659

and their relevance for the relation between tensile strength, amount of water, individual shape and content of superabsorbents.

IV. Oral proceedings were held on 13 July 2006.

The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the claims in accordance with a main or first to fourth auxiliary requests filed during the oral proceedings.

The respondent requested that the appeal be dismissed.

Claim 1 according to the main request reads as follows:

"A method of producing an absorbent structure that includes cellulose fibres and particles of superabsorbent material, said method comprising forming an air-laid structure of cellulose fibres and superabsorbent particles, characterised by moistening the entire said air-laid structure to a moisture

content of at least 15%, calculated on the total weight of the structure, and thereafter drying the structure to a moisture content of at most 12%, the structure containing 3 - 35% superabsorbent particles, calculated on the total weight of the structure before moistening."

In claim 1 of the first auxiliary request, the method is restricted to moistening "the entire said air-laid structure to a moisture content of at least 20%, calculated on the total weight of the structure, wherein said absorbent structure remains moist over a period of time of at least one minute..." before the drying step in the characterizing portion.

In claim 1 of the second auxiliary request, the method is restricted to moistening "the entire said air-laid structure to a moisture content of at least 35%" but is otherwise identical to the method claimed in claim 1 of the first auxiliary request.

In claim 1 of the third auxiliary request the characterising portion is defined as "by moistening the entire said air-laid structure to a moisture content of at least 20%, calculated on the total weight of the structure, wherein said absorbent structure remains moist over a period of time of at least one minute, and thereafter drying the structure to a moisture content of at most 12%, the structure containing 30% superabsorbent particles, calculated on the total weight of the structure before moistening."

In claim 1 of the fourth auxiliary request, the method is restricted to moistening "the entire said air-laid

structure to a moisture content of at least 35%" but is otherwise identical to the method claimed in claim 1 of the third auxiliary request.

V. In support of its requests the appellant essentially relied upon the following submissions:

The patent in suit explained sufficiently clearly and completely how to perform the claimed method. With respect to the method of the main request, the skilled person knew how to moisten and subsequently dry an absorbent structure. The skilled person was also aware of the fact that under normal conditions a moisture content of 0% could not be obtained. The dry raw material comprising the cellulose fibres (fluff, pulp) usually had a wetness of around 8% (depending on ambient temperature and humidity) and such a condition was intended to be covered by the claimed range.

Considering the requirements of Article 123(2) EPC, the amendments were based upon the disclosure in the application as originally filed (page 5, lines 1 and 2). In view of granted claim 1, the moisture content of "at least 15%" had been limited to "at least 12%"; no lack of clarity could result from such a limitation.

With respect to the term "absorbent structure" used in the preamble of claim 1, this term could only be understood as referring to the "air-laid structure" of the characterising portion. The skilled person had no problem in relating the air-laid structure to the absorbent structure.

The subject-matter of claim 1 according to the main request and according to the first auxiliary request was novel over D8 and D2. D8 did not refer to superabsorbent particles and did not disclose a particular resultant moisture content. D2 only referred to a method of testing but not to a method of producing an absorbent structure. With respect to the first auxiliary request, none of the examples in Table 1 of D2 had been moistened to a moisture content of at least 20%.

For the assessment of inventive step, both D2 and D8 had to be considered. D2 referred to air-laid absorbent structures but did not discuss the relevance of the drying step. D2 was mainly concerned with producing thinner absorbent products without the migration or loss of superabsorbent material when these were present in higher amounts and the solution of this problem involved optimizing stiffness, shake out value and saturation capacity, as was apparent from Table 1.

With respect to inventive step when starting from D8, the opposition division identified the feature of a moisture content of at most 12% as the only one not being explicitly disclosed in this document. Also however, D8 did not refer to particles but to superabsorbent fibres. Hence this document did not represent a proper starting point for the evaluation of inventive step.

The third and fourth auxiliary requests should be admitted to the proceedings. The subject-matter of their respective claims 1 was clearly derivable from and sufficiently supported by the application as filed.

The basis for the amendment concerning the amount of superabsorbent particles could be found in examples B and C of Table 1, which disclosed a proportion of superabsorbent particles of 30% and this percentage was also referred to on page 6, lines 2 to 5 and page 7, line 5 of the application as filed. The basis for the amendment concerning the moisture content of at least 20% or at least 35% was disclosed on page 4, lines 17/18 of the application as filed. Hence, the requirements of Article 123(2) EPC were met.

VI. The submissions of the respondent can be summarized as follows:

Considering all requests, the skilled person would not know how the drying step should be conducted in order to achieve the wanted properties. Particularly, the subject-matter of claim 1 included drying of the structure to a moisture content in the range of from 0% to 12%. A moisture content of 0% could not be obtained under normal conditions. Furthermore, nowhere was it shown in the patent in suit that an improved tensile strength could be obtained over the whole range of moisture content claimed.

With respect to all requests, the term "absorbent structure" was used in the preamble whereas in the characterising portion reference was made to the "air-laid structure". This was a deficiency as to clarity because it was not clear whether the same structure was meant (Article 84 EPC).

The subject-matter of claim 1 according to the main request was not novel over D8. The term "particles"

could include fibres, as is stated in the "Macquarie Dictionary and Thesaurus", ISBN 0949757594, which refers to particles as being a "Minute portion, piece or amount, a very small bit ..." and also in

D4 EP-A-0 122 042

which particularly referred to fibres being included in the term "particles". Moreover, D2 referred in particular to particles having a non-fibrous shape. Accordingly the superabsorbent fibres of D8 also could be considered as being superabsorbent "particles" and, furthermore, D8 disclosed the combination of all the claimed method steps. An equivalent moisture content of the structure after drying was implicitly disclosed in the embodiment using water as a binder.

The subject-matter of claim 1 according to the main request was also not novel over D2. Regarding example 12 and its water content of 16.0% seen in combination with the test conditions which involved exposure of the web to a temperature of about 105°C for a period of about 24 hours, a moisture content of at most 12% necessarily resulted.

The subject-matter of claim 1 according to the first auxiliary request was not novel over D8. D8 already referred to an immersion of the structure in water and accordingly a moisture content of at least 20% was certainly present.

When assessing inventive step and starting from D2, no specific problem was solved. Therefore, there could not be an inventive step. D2 disclosed in examples 1, 2 and 12 that the water content of the absorbent structure should be optimized with regard to the amount of

superabsorbent, the shake out value, the stiffness, etc. The claimed method appeared to be the mere result of such optimizing when carried out by the skilled person.

When starting the assessment of inventive step from D8, the opposition division identified the feature of a moisture content of at most 12% as the only one not being explicitly disclosed in this document. Neither a problem to be solved nor any inventive step could be related to this feature. The patentee had not even tried to overcome this argument by filing evidence that an amount of 0 to 12% was in anyway beneficial. Hence, it represented an arbitrary range.

The subject-matter of claim 1 according to the second auxiliary request differed from the subject-matter of claim 1 of the first auxiliary request only in the degree of moistening. D8 referred to moistening up to saturation and thus a moisture content during the manufacturing process of either at least 20% (first auxiliary request) or at least 35% (second auxiliary request) was already known from this document.

With respect to the third and fourth auxiliary requests, these should not be admitted into the proceedings because they were late filed and were not clearly allowable. The combination of a moisture content of at least 20% (auxiliary request 3), or at least 35% (auxiliary request 4), with an amount of superabsorbent particles of 30%, was not originally disclosed. Examples B and C disclosed 30% of superabsorbent (paragraphs [0023] to [0027]) only in relation to a particular superabsorbent material (IM 7100™ from Hoechst) and in relation to a structure composed of

chemical pulp. The examples B and C were wetted substantially to saturation, which did not imply that the same results would be obtained with a moisture content of only at least 20% or of at least 35%. Hence, regarding the requirements of Article 123(2) EPC, the subject-matter of claim 1 of the auxiliary requests 3 and 4 lacked a sufficient basis in the application as filed.

## Reasons for the Decision

1. The appeal is admissible.

2. *Sufficiency (Article 83 EPC)*

Reading the description and the claims, the skilled person can carry out the claimed method of producing an absorbent structure in that the method steps include air-laying a structure, moistening and drying. These steps represent usual method steps which are clear and the skilled person is capable of performing them since there are standard methods available which are well-known in the art. The range of from 0% to 12% moisture content after drying the structure is in itself clear. Even acknowledging that a value of 0% would not be obtained under normal conditions, it is not impossible that under laboratory conditions such a value can be approximated. No evidence to the contrary has been filed. Hence, in agreement with the opposition division, the Board considers the patent in suit to meet the requirements of Article 83 EPC.

An improved tensile strength is not claimed and tensile strength is not linked in the description to any particular moisture content. Also Table 1 does not refer to any data which would link any one of the claimed moisture ranges to a particular tensile strength. This aspect is discussed under inventive step below and is not related to the ability of producing the structure itself.

3. *Article 84 EPC*

As to the appellant's objection that the term "absorbent structure" was used in the preamble whereas in the characterising portion reference was made to the "air-laid structure", and thus a lack of clarity arises due to the question whether the same structure was meant, no such lack of clarity is present. An absorbent structure which is formed by air-laying a structure of cellulose fibres and superabsorbent particles always results in an air-laid structure. Therefore, the absorbent structure is characterised more specifically in the characterising portion as an air-laid structure and does not give rise to objections under Article 84 EPC.

4. *Main Request*

4.1 Amendments

4.1.1 The subject-matter of claim 1 concerns a method of producing an absorbent structure. It is based upon the subject-matter of claim 1 as originally filed with the additional feature that the absorbent structure is referred to as including cellulose fibres. This latter

feature is supported by originally filed page 3, lines 18 and 29 to 31. The characterising portion of claim 1 has further been limited to the entire air-laid structure being moistened (see originally filed page 4, lines 16 to 24) and to the structure containing 3 to 35% superabsorbent particles (see claim 2 and page 4, line 11 to 14 as originally filed).

4.1.2 Thus, there is a clear and unambiguous disclosure to be found in the application as filed for such a method of producing an absorbent structure. Accordingly, the combination disclosed by this claim 1 does not contain subject-matter extending beyond the content of the application as filed and the requirements of Article 123(2) EPC are met.

4.2 Novelty

D2 refers to absorbent composites comprising an airlaid mixture of fibrous material, particulate superabsorbent material and water. With respect to a method of producing such absorbent structures, examples are produced by forming absorbent composites from fibrous wood pulp fluff and superabsorbent particles based upon poly acrylic acid (D2, column 12, lines 35 to 67). The combination is air-laid on a single ply, creped tissue and water is added to the composites by spraying. After application of the water and C-folding, the absorbent composites are embossed. A number of absorbent composites are formed having varying concentrations of wood pulp fluff, superabsorbent particles and water. Their composition and physical properties are listed in Table 1 (column 13, lines 11 to 50). After formation, the absorbent composites are subjected to physical

property testing. The percentage of water given in Table 1 refers to the addition of water during the manufacturing process (column 13, lines 50 to 60) whereas the physical properties were tested on finished composites (column 13, lines 20 to 25) which, according to column 4, line 23 to 48, were dried before testing at 105°C for 24 h. No resultant water content is listed. However, according to column 4, line 18 to 24, the mixture (fibrous material, superabsorbent material and water) was exposed to conditions "sufficient to evaporate essentially all of the water present therein" and then weighed in order to obtain the dry weight. Therefore, the wording "to evaporate essentially all of the water" can only be understood to refer to a resultant water content approximating 0% but certainly being in the range of from 0% to 12%.

D2 discloses in Table 1 sample no. 12, which has a content of 16.0% water, 16.8% superabsorbent and 67.2% fluff pulp. The amount of superabsorbent particles lies within the claimed range (3 to 35%) and the structure was moistened as required by the subject-matter of claim 1 (at least 15%). As set out above, according to column 4, lines 31 to 34, all sample composites underwent the drying process (105°C for 24 h). It is thus implicit that an absorbent structure having a moisture content of less than 12% is obtained.

When reading the disclosure of D2, the skilled person would not disregard the comparative samples and the test procedure. These samples form part of the disclosure irrespective of whether they are called inventive samples or comparative samples. Sample no. 12 thus forms part of the disclosure and is produced in a

manner which complies with all method steps claimed in claim 1.

Hence, the subject-matter of claim 1 of the main request is not novel (Article 54 EPC) over the disclosure in D2 concerning the sample no. 12. Therefore, it is not necessary to discuss the further novelty objection put forward with respect to D8.

5. *First Auxiliary Request*

5.1 Article 123(2) EPC

Claim 1 of the first auxiliary request differs from claim 1 of the main request in that the method is restricted to moistening "the entire said air-laid structure to a moisture content of at least 20%, calculated on the total weight of the structure, wherein said absorbent structure remains moist over a period of time of at least one minute..." before the drying step in the characterizing portion.

This amendment is based upon the description on page 4, line 17 and on page 5, lines 5/6 of the application as originally filed. The requirements of Article 123(2) EPC are met.

5.2 Novelty

5.2.1 D2 was considered novelty destroying by the respondent. However, none of the examples of D2 disclosed in its Table 1 refers to a moisture content of at least 20% in the process combined with drying to a moisture content of at most 12% for the resultant structure. Hence, the

subject-matter of claim 1 of the first auxiliary request is novel over the disclosure in D2.

5.2.2 D8 was also cited by the respondent with regard to lack of novelty. D8 relates to a process for binding fibrous web (see the title). Wood pulp or cellulose are used as fibrous materials (page 2, lines 1/2) and air-laid (page 3, line 25) in combination with superabsorbent fibres (page 2, line 13 to page 3, line 23). D8 refers to two different embodiments. In the first embodiment the absorbent structure is formed from water-absorbent fibres and can contain superabsorbent particles. The second embodiment refers to a web comprising a blend of non-water absorbent (cellulose) fibres and superabsorbent fibres. This second embodiment is relevant for the present case. D8 acknowledges the binding action of water (page 5, lines 5 to 8; page 7, lines 24 to 27) and the web is either immersed in water or the water is applied by spraying (page 5, lines 10 to 13). Additional binders may be used where the percentage of superabsorbent material is low (page 5, lines 24/25). The binder is applied to the web and subsequently cured. For curing of the binder, it is suggested that the web be passed through an oven (page 6, lines 13 to 18). Alternatively, the binder may be applied to the web as an aqueous solution and as the web is dried the binder will cure (page 6, lines 23 to 27). This drying step is not quantified with respect to the resultant moisture content. In Table 1 of D8, data of examples 1 and 2 are given, and the content of the superabsorbent fibres is 30% and 22.4%, respectively. Hence, D8 discloses all claimed method steps with the exception of the extent to which the structure is dried.

It was further disputed by the appellant that the term "particles" as used in the patent in suit could be applied to or included the superabsorbent fibres of this second embodiment referred to in D8.

The citation from the dictionary: "Macquarie Dictionary and Thesaurus, ISBN 0949757594" wherein the term "particle" is explained as being a "minute portion, piece or amount, a very small bit ..." does not exclude the possibility of fibres being particles. Moreover also D2 (column 3, lines 56 to 58) emphasizes that particles having a non-fibrous shape are used and thus supports the view that particles can also be referred to as having a fibrous shape. Various citations in D8 also only refer to superabsorbent fibres as a preferred feature (page 2, line 13/13; page 5, line 1; page 7, line 13; page 8, line 4). In the absence of any counter-evidence, it can only be deduced that the skilled person would not rule out the possibility of small fibres also being "particles".

Therefore, the only difference in the disclosure between the subject-matter of claim 1 and D8 lies in drying the structure to a moisture content of at most 12%. For this reason, the subject-matter of claim 1 is novel (Article 54 EPC).

5.2.3 Inventive step

In order to assess inventive step, the problem which is to be solved by the claimed subject-matter has to be identified. According to the patent in suit the problem is allegedly related to improved strength properties of

the absorbent structure (paragraph [0003]). However, there are no data available in the patent in suit which link the dryness of the structure to a tensile strength or any other strength. Table 1 gives data with respect to tensile strength dependent on the amount of superabsorbent. Table 2 gives absorption properties before and after treatment. However, in neither Table 1 nor Table 2 is the water content of the samples specified - whether during manufacture or after the drying step. The claimed subject-matter thus cannot be considered as addressing this problem.

As set out above when discussing novelty, D8 also discloses a process for obtaining an absorbent fibrous structure. Accordingly, it represents the closest prior art. With respect to the features of claim 1, it discloses the drying of the structure but in particular it does not disclose drying the structure to a moisture content of at most 12%. This was also referred to in the decision of the opposition division on page 11. The problem underlying the patent in suit when starting from D8 is to produce an absorbent structure comprising a moisture content within a specific range. This problem is solved by the features of claim 1, which specifies an upper limit of 12% for the moisture content and thus refers to a range of from 0% to 12% moisture content.

The question is whether the claimed range of moisture could and would be chosen by the skilled person for the resultant structure.

The skilled person knows (see for example D2, column 4, lines 38 to 40) that a moisture content of around 8% is

considered as natural and usual for cellulose structures. The skilled person knows as well that the properties of absorbent materials are influenced by the moisture content, particularly the absorbent capacity and stiffness.

In the patent in suit there is no disclosure as regards any effect achieved by drying the web to specifically at most 12%. No further evidence on this point has been filed. Drying in an oven for curing the binder as suggested in D8 (page 6, lines 15/16 and 27) could result in a structure whose moisture content fell within the claimed range. The respondent has previously regarded such a moisture level after drying to be implicitly disclosed by D8 (minutes of the oral proceedings before the opposition division, point 18). This range or upper limit is not disclosed in D8, indeed that is the reason why the claimed method is considered novel. Moisture contents slightly above the claimed range could also be obtained by the method of D8. However, since the upper limit is not linked to any effect, the choice of this upper limit for this range can only be regarded as an arbitrary one. Hence, no inventive step can be seen in the claimed method, which includes drying the structure to at most 12%, whether based on D8 alone or in combination with the general knowledge of the skilled person.

6. *Second auxiliary request*

Claim 1 of the second auxiliary request differs from claim 1 of the first auxiliary request by limiting the claimed method to moistening "the entire said air-laid structure to a moisture content of at least 35 %".

D8 already discloses an immersion of the web in water, as set out above for the first auxiliary request and this obviously results in a moisture content of more than 35%. Therefore, for the reasons given above with respect to the first auxiliary request, the subject-matter of claim 1 of the second auxiliary request also does not involve an inventive step.

7. *Third and fourth auxiliary request*

Claim 1 of the third auxiliary request specifies the characterising portion as "moistening the entire said air-laid structure to a moisture content of at least 20%, calculated on the total weight of the structure, wherein said absorbent structure remains moist over a period of time of at least one minute, and thereafter drying the structure to a moisture content of at most 12%, the structure containing 30% superabsorbent particles, calculated on the total weight of the structure before moistening."

In claim 1 of the fourth auxiliary request, the method is further restricted to moistening "the entire said air-laid structure to a moisture content of at least 35%" and is otherwise identical to the method claimed in claim 1 of the third auxiliary request.

A structure containing 30% superabsorbent particles is disclosed in the patent in suit in relation to Samples B and C of Table 1. However, these Samples B and C are further characterised by the superabsorbent particles being specified as IM 7100™ (Hoechst) and by the cellulose fibres being in the form of a chemical pulp.

Therefore, only this specific embodiment is disclosed with such a percentage of superabsorbent particles. Thus neither the subject-matter of claim 1 of the third auxiliary request nor the subject-matter of claim 1 of the fourth auxiliary request prima facie meets the requirements of Article 123(2) EPC and, accordingly, they are not clearly allowable, this being a pre-condition for admitting these late filed requests into the proceedings. Hence, these requests are not admitted into the proceedings.

8. Since there are no other requests, it follows that the appeal must be dismissed.

## Order

## For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Patin P. Alting van Geusau