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**D E C I S I O N**  
**of 24 May 2000**

**Case Number:** T 0363/96 - 3.2.6  
**Application Number:** 89107034.4  
**Publication Number:** 0339461  
**IPC:** A61F 13/15, A61F 13/46  
**Language of the proceedings:** EN

**Title of invention:**

Absorbent products containing hydrogels with ability to swell against pressure

**Patentee:**

KIMBERLY-CLARK CORPORATION

**Opponent:**

The Procter & Gamble Company  
Stockhausen GmbH & Co.KG  
Mölnlycke AB

**Headword:**

Requirements to the standard of proof applicable to an alleged prior use ("balance of probabilities" - "up to the hilt")

**Relevant legal provisions:**

EPC Art. 54, 56, 83, 84, 123

**Keyword:**

"Limitation of appeal proceedings to the question of novelty of the subject-matter of claim 1"  
"Novelty of subject-matter of claim 1 (no) (public prior use) (main and auxiliary requests 1, 1a, 1b)"  
"Novelty of subject-matter of claim 1 (yes) (auxiliary request 2)"

**Decisions cited:**

T 0472/92, T 0750/94, T 0270/90

**Catchword:**

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Case Number: T 0363/96 - 3.2.6

**D E C I S I O N**  
**of the Technical Board of Appeal 3.2.6**  
**of 24 May 2000**

**Appellant:** KIMBERLY-CLARK CORPORATION  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 15 March 1996  
revoking European patent No. 0 339 461 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** P. Alting van Geusau  
**Members:** H. Meinders  
M. J. Vogel

## Summary of Facts and Submissions

I. European Patent No. 0 339 461, granted on application No. 89 107 034.4, was revoked by the Opposition Division by decision announced on 30 November 1995 and posted on 15 March 1996. It based the revocation exclusively on the fact that claim 1 of the patent in the amended form as filed with letter of 10 February 1995 did not fulfil the requirements of Article 54 EPC (novelty) in respect of a prior public use of a "Merries 376" diaper, hereafter referred to as the "Merries diaper".

Of the evidence submitted in the opposition proceedings and considered in the decision under appeal the following are relevant for this decision:

- D2: A.A. Burgeni et al: "Capillary Sorption Equilibra in Fiber Masses", Textile Research Journal Vol. 37, Nr. 5, May 1967, pages 356-366.
- D6: US-A-4 699 823
- D29: Exhibit KHB.1 of Affidavit K.H. Blankenheim
- D42: Exhibit MP.11 (Calculation AGM distribution) of Affidavit M. Plischke
- D43: Exhibit MP.12 (Technical report of M. Plischke of Procter & Gamble) of Affidavit M. Plischke
- D43A: Raw data volume to Exhibit MP.12
- D47: 1st Affidavit J.P. Hanson
- D49: Exhibit CLF.1 of Affidavit C.L. Farine
- D77: Exhibit IND.1 of Affidavit I.N. Dias
- D79: Exhibit JEP.1 of Affidavit J.E. Pascente
- D85: Exhibit IT.2 of Affidavit I. Tyomkin
- D91: 2nd Affidavit of S.C. Rocke with Exhibits 2SCR.1-5

- D92: Exhibits 2SCR.12, 13 and 15 of Affidavit  
F. Hopkins
- D93: Photos obtained by X-ray tomography
- D104: 3rd Affidavit J.E. Pascente + Exhibit JEP.5.

Of the evidence submitted during the appeal proceedings  
the following is relevant for the present decision:

- D107: Superabsorbent polymers-Masuda (1993)
- D108: Studies in baby care-Yamamoto (1984)
- D109: Nordic Nonwovens Symposium-Superabsorbent  
polymers for disposable diapers-Shimomura (1988)
- D110: Handwritten note-Kellenberger (1984)
- D111: Science of the paper diaper-Okuda (1986)
- D112: Interoffice memo Kimberley-Clark - Woeckner  
(1986)
- D113: Absorbent products conference - Here today, gone  
tomorrow - Hanson (1987)
- D114: Agenda from Sanyo
- D115: 3rd Affidavit James Hanson
- D116: Super water absorbant resins - Masuda (1982)
- D117: Sanwet IM-300 - Sanyo (Undated; date by  
patentee: 1979)
- D118: SAP sheet - Sanyo (1982)
- D119: Sanwet IM-300 - Sanyo (1979)
- D122: Photographs 2D-scan 2SCR.12-14
- D125: 2nd Affidavit M.K. Melius

II. The Appellant (Patentee) both filed a notice of appeal  
against this decision and paid the appeal fee on  
23 April 1996. On 12 July 1996 the grounds of appeal  
were filed.

III. In an annex to the summons to oral proceedings pursuant  
to Article 11(2) of the Rules of Procedure of the

Boards of Appeal the Board expressed the intention that in case the prior use of the Merries diaper was not pertinent for the question of novelty of the claimed subject-matter it would remit the case back to the first instance, for continuation of the opposition proceedings.

IV. Oral proceedings took place on 24 May 2000.

The Appellant requested cancellation of the decision under appeal and maintenance of the patent in amended form based on the set of claims in accordance with either the main request (claims 1 to 16) submitted during the oral proceedings or in accordance with one of five auxiliary requests 1, 1a, 1b (all with claims 1 to 15), 2 (with claims 1 to 16) and 3 (with claims 1 to 15). Of these requests the first and last had been filed with letter of 23 March 2000 and the remaining were filed during the oral proceedings.

Respondents I, II and IV (Opponents 01, 02 and 04) requested dismissal of the appeal. Respondent III (Opponent 03) had withdrawn its opposition with letter of 26 January 2000.

In the oral proceedings all parties agreed to remittal of the case to the first instance for continuation of the opposition proceedings in the event the Board came to the conclusion that the subject-matter of claim 1 of any one of the requests presented novelty over the Merries diaper as subject of the prior use.

V. Independent claims 1 to 3 according to the **main request** read as follows:

"1. An absorbent composite (16) comprising a porous fiber matrix (18) and an amount of superabsorbent material (20) present in said porous fiber matrix in the form of discrete particles dispersed among the interfiber pores (22) characterised in that said superabsorbent material (20) can absorb at least 27 milliliters of an aqueous solution of sodium chloride containing 0.9 weight percent sodium chloride per gram of superabsorbent material while under a restraining pressure of 21,000 dynes per square centimetre when determined by the Absorbency Under Load (AUL) test method as described in the description, and that at least about 50% by weight of said dispersed discrete particles of superabsorbent material has a size in the unswollen condition which is greater than the median pore size of said porous fiber matrix (18) when wet."

"2. An absorbent composite (16) comprising a porous fiber matrix (18) and an amount of superabsorbent material (20) present in said porous fiber matrix in the form of discrete particles dispersed among the interfiber pores (22), characterised in that said superabsorbent material (20) can absorb at least 24 millilitres of an aqueous solution of sodium chloride containing 0.9 weight percent sodium chloride per gram of superabsorbent material while under a restraining pressure of 21,000 dynes per square centimeter when determined by the Absorbency Under Load (AUL) test method as described in the description, that said porous fiber matrix (18) comprises at least about 3% by weight based on total fiber matrix weight of a synthetic polymeric fiber, and that at least about 50% by weight of said superabsorbent material has a size in the unswollen condition which is greater than the median pore size of said porous fiber matrix (18) when



wet."

"3. An absorbent composite (16) comprising a porous fiber matrix (18) and an amount of superabsorbent material (20) present in said porous fiber matrix, characterised in that said superabsorbent material (20) can absorb at least 27 milliliters of an aqueous solution of sodium chloride containing 0.9 weight percent sodium chloride per gram of superabsorbent material while under a restraining pressure of 21,000 dynes per square centimeter, and that the superabsorbent material (20) is in the form of fibers having a length to diameter ratio of at least 5:1, and that at least about 50% by weight of said superabsorbent fibers have a geometric mean diameter of at least about 33  $\mu\text{m}$ ."

Claim 1 according to **auxiliary request 1** differs from claim 1 of the main request in that "50%" is replaced by "80%" and the wording following this percentage ("dispersed discrete particles of") is deleted.

Claim 1 according to **auxiliary request 1a** differs from claim 1 of the main request in that "50%" is replaced by "80%".

Claim 1 according to **auxiliary request 1b** differs from claim 1 of the main request in that "about 50%" is replaced by "80%" and the wording following this percentage ("dispersed discrete particles of") is deleted.

Claim 1 according to **auxiliary request 2** reads as follows:

"1. An absorbent composite (16) comprising a porous fiber matrix (18) and an amount of superabsorbent material (20) present in said porous fiber matrix in the form of discrete particles dispersed among the interfiber pores (22) characterised in that said superabsorbent material (20) can absorb at least 27 milliliters of an aqueous solution of sodium chloride containing 0.9 weight percent sodium chloride per gram of superabsorbent material while under a restraining pressure of 21,000 dynes per square centimetre when determined by the Absorbency Under Load (AUL) test method as described in the description, and that at least about 80% by weight of said dispersed discrete particles of superabsorbent material has a size in the unswollen condition which is greater than the median pore size of said porous fiber matrix (18) when wet and is greater than about 200 microns."

In the auxiliary requests 1, 1a, 1b and 2 the independent claims 2 and 3 correspond to the independent claims 2 and 3 of the main request.

The independent claims 1 and 2 in accordance with **auxiliary request 3** correspond to claims 2 and 3 of the preceding main and auxiliary requests.

VI. In support of its request the Appellant argued that Respondent I had the full burden of proof regarding the prior public use of the Merries diaper. It had not succeeded in proving "up to the hilt" (as laid down as guiding principle in *inter alia* T 472/92 (OJ 1998, 161)) that all particles of superabsorbent material present in this diaper could be considered "dispersed discrete particles" as claimed. This required the superabsorbent material to be in the form of discrete

particles distributed among the interfiber pores of the matrix and thus excluded clumping of particles and remaining together of particles in a layer between two layers of fluff. The Merries diaper was most probably manufactured by depositing a layer of fluff on a drum or conveyor, sprinkling particulate superabsorbent material thereon and depositing another layer of fluff thereon, with subsequent embossing to keep the layers together. The X-rays (D79) showed, however, clear clumping of material in areas corresponding to the embossing pattern. These clumps could not be considered "discrete particles dispersed among the interfiber pores". Only the smaller particles would have migrated into the fluff layers, the larger particles, however, appeared to have remained in a single layer. The claimed requirement of a certain percentage of the dispersed discrete particles being of a certain particle size in relation to the median pore size could only apply to the particles which did not clump or remain together and to the particles which had migrated into the matrix.

As concerns the further specification of the subject-matter of the claims 1 of the auxiliary requests 1, 1a, 1b, in which the weight percentage of the particles fulfilling the requirement of dispersion should be at least about 80% or at least 80%, the basis for such further specification was given by the originally filed claim 12. When assessing novelty of such subject-matter the median pore size of the fiber matrix of the Merries diaper should be determined by employing the absorption cycle of the Burgeni test (D2) referred to in the patent. This test resembled best the situation where the matrix was wetted for the first time. When employing that cycle of the Burgeni test the median

pore size of the fiber matrix of the Merries diaper would be larger than the particle size of at least 80 weight percent of the particles and not smaller as required by claim 1 of these requests.

As concerns auxiliary request 2, in which it was further specified that about 80 weight percent of the dispersed discrete particles of the superabsorbent material had a particle size of at least 200 microns, it was clear that the Merries diaper would not involve that feature. The basis for this amendment could be found in the application as filed, page 16, line 22 to page 17, line 3 in combination with either claim 13 or with page 15, line 22 to page 16, line 5.

In respect of independent claim 3 of the main and the auxiliary requests 1, 1a, 1b and 2 as well as independent claim 2 of the third auxiliary request, the Appellant expressed its willingness to clarify the claim by including therein the statement "when determined by the Absorbency Under Load (AUL) test method as described in the description". This would solve the objection of lack of clarity of the claims (Article 84 EPC) raised by Respondent II.

VII. The Respondents did not share the Appellant's views and their submissions can be summarised as follows:

Respondent I argued in essence that the full burden of proof in the present case could not be imposed on it as the present case was not comparable to the one of T 472/92 (supra), where all the evidence lay within the power and knowledge of the opponent. The prior use of the Merries diapers concerned a disclosure by a party entirely outside of Respondent I's influence. The

diapers concerned were commercially still available from Mr Hanson's firm MTS (D115) and Respondent I had even made the effort to provide the Appellant with a sample for testing, thus the latter should have had no difficulty in providing proper counter-evidence on the basis of its own testing of the Merries diapers.

As concerns the question whether the Merries diapers had their superabsorbent material dispersed as discrete particles it had to be stressed first that the patent in suit did not exclude clogging (the particles should be "generally dispersed", see page 5, line 1 of the patent) and that at the high weight percentages of superabsorbent material (up to 90% by total weight of the matrix plus the superabsorbent material) and the on average very small size of the particles (in the region of 100  $\mu$ m) disclosed in the patent, even also the patentee could not guarantee that clogging or having more than one particle within one pore would be excluded when performing the invention of the patent in suit.

The question was further not whether only small particles would migrate from the central region into the pores of the matrix or whether also large particles would do this. In the kind of production process of the diapers now agreed upon by all parties as having most probably led to the Merries diapers the particles sprinkled onto the fluff layer would be on a surface with a very irregular three-dimensional shape, thus at different heights. On these particles dispersed over this irregular surface would come an equally irregular covering fluff layer, enveloping the particles. Thus all particles would in the end be enveloped by fluff material, being contained in pores made up by the

fibers of the cooperating bottom and top fluff layers. Thus, for determination of the particle size distribution, the total amount of superabsorbent material present in the Merries diapers could be taken, instead of only those particles which had actually migrated into the matrix.

As concerns the auxiliary requests 1, 1a or 1b, in which the weight percentage of the particles fulfilling the particle size requirement was "about 80 percent" or "80 percent", either cycle (absorption or desorption) of the Burgeni test could be taken for the determination of the median pore size of the fibre matrix, because the patent in suit did not mention which one should be applied. If a specific cycle would have to be chosen, this would be the desorption cycle, as that cycle resembled best the actual situation in a diaper, where the fluid surges would wet the fibers before the superabsorbent material would begin to swell. The absorption cycle only provided a value for the pore size of the fiber matrix being half wet/half dry and thus could not relate to the actual situation occurring in a diaper during fluid surges which wetted the fibers very quickly. Even if the absorption cycle of the Burgeni test would have to be taken, the weight percentage of the particles in the Merries diapers having a size larger than the median pore size in the fiber matrix (being 75 to 78%) would be very close to the value of 80%. This fell within the error margin which naturally existed around the specific value of 80% as claimed in claim 1 of auxiliary request 1b or which was implied by the wording "about 80%" as claimed in claim 1 of auxiliary requests 1 and 1a.

As concerns auxiliary request 2, Respondent I objected

under Article 123(2) EPC to the inclusion of the limitation of at least about 80 weight percent of the particles having a particle size "greater than 200 microns". This value was never disclosed in connection with the amount of 80 weight percent of the particles, only with the amount of 50 weight percent of the particles, and then only in combination with specific densities of the fiber matrix.

Respondent IV argued that the Appellant had not succeeded in proving its assertion that clumping of particles or concentration of particles in pockets in the fiber matrix had occurred in the Merries diapers. The claimed wording "discrete particles dispersed among the interfiber pores" and "at least about 50% by weight of said dispersed discrete particles of superabsorbent material" did not exclude the possibility of more than one of these particles being in a single pore in the fiber matrix. If that should be the case, the patent should have claimed the particles as being "discreetly dispersed in the matrix", which it did not. The Appellant could not base a novel claim on this in view of the fact that a main embodiment of the invention was a fiber matrix according to D6 in which the particle concentration was zero for a certain stretch of the matrix inward from both the body and the outer side of the absorbent article, rising sharply to a maximum in the middle of the matrix. This could only be achieved in the same way as the Merries diapers were produced, namely by sprinkling a first layer of fluff with particles and then depositing a second layer of fluff thereon.

Respondent II supported the arguments of Respondents I and IV; it added to their submissions the objection

that independent claim 3 of the main request and of auxiliary requests 1, 1a, 1b, 2 and claim 2 of the third auxiliary request was not clear (Article 84 EPC) because the method of determining the absorbency under load (AUL) was not defined in the claim; it contained added subject-matter (Article 123(2) EPC) by using a reference sign which did not relate to the superabsorbent material being in the form of fibers. Further the patent did not fulfil the requirements of Article 83 EPC, because it did not give indications how to determine the absorbency under load for **fibers**, because the test method was only mentioned for determining the AUL of superabsorbent **particles**.

### **Reasons for the Decision**

1. The appeal is admissible
2. *Amendments (Articles 84 and 123(2) and (3) EPC)*
  - 2.1 The claims in accordance with the Appellant's requests are in essence based on claims 1 to 17, the subject of the decision under appeal, of which claim 4 has been deleted.

In view of the detailed analysis and conclusions in the decision under appeal in respect of original disclosure and limitation of the extent of the scope of protection, at least as regards the subject-matter of claim 1, with which the Board agrees, and in the absence of any submissions by the Respondents questioning the amendments in respect of the requirements of Article 123(2) and (3) EPC, the Board sees only the need to discuss the additional amendments



submitted in the appeal proceedings.

- 2.2 In respect of claim 3 of the main request and auxiliary requests 1, 1a, 1b and 2 (claim 2 of auxiliary request 3) Respondent II raised in his submission dated 24 March 2000, that is for the first time in appeal, the objection that this amended claim was unclear (Article 84 EPC) in not mentioning how the absorbency under restraining pressure was measured, and furthermore did not comply with Article 123(2) EPC in respect of the reference sign "(20)", which only related to particulate superabsorbent material and not to such material in the form of fibers.

The Board considers these objections *prima facie* relevant: claims 1 and 2 of the main request and auxiliary requests 1, 1a, 1b and 2 as well as claim 1 of auxiliary request 3 mention the test method as being the "AUL test method as described in the description" and claim 3 does not. The reference sign "20" has only been used in connection with particulate superabsorbent material and not with such material in the form of fibers.

However, since the outcome of the present appeal proceedings (see below) is a remittal to the Opposition Division for continuation of the opposition proceedings on the basis of the claims of auxiliary request 2 and since the decision under appeal has not gone into the question of the patentability of the subject-matter of the independent claims 2 and 3, the Board considers it premature to consider in the present appeal proceedings the above mentioned objections regarding the allowability of the amendments to claim 3 in isolation.

Further objections, regarding the patentability of the subject-matter of these claims, had been raised by the Respondents in the opposition proceedings. In the continued opposition proceedings these objections may have to be considered by the Opposition Division and may result in the necessity of further amendment of these claims.

### 2.3 Main request

Claim 1 of the main request, when compared with claim 1 underlying the decision under appeal, now contains a further limitation that the amount of at least about 50% by weight of said superabsorbent material applies to the **dispersed discrete particles** of said material. The basis for this amendment can be found in the original application, page 8, line 15 and page 15, lines 22 to 25. The amendment further makes it clear that the dispersed discrete particles of the superabsorbent material should fulfil the size requirement in respect of the pore size.

The amendment to this claim thus fulfils the requirements of Articles 84 and 123(2) and (3) EPC.

### 2.4 Auxiliary requests 1, 1a and 1b

2.4.1 The limitation to 80% by weight of the superabsorbent material (auxiliary requests 1 and 1b) or to 80% by weight of the dispersed discrete particles of superabsorbent material (auxiliary request 1a), instead of 50% by weight of the dispersed discrete particles of superabsorbent material having the indicated size in the unswollen condition, finds a basis in the original application documents page 15, line 24; page 38,

line 14 and claim 12.

- 2.4.2 The addition of the feature "dispersed discrete particles of" (auxiliary request 1a) has already been addressed in point 2.3 above.

These amendments thus meet the requirements of Article 123(2) and (3) EPC.

## 2.5 Auxiliary request 2

- 2.5.1 The further limitation in respect of claim 1 of auxiliary request 1a, that at least about 80% by weight of the dispersed discrete particles of superabsorbent material has a size in the unswollen condition which is greater than 200 microns, finds its basis in the application as filed, page 16, line 22 to page 17, line 3 combined with either claim 13 or with page 15, line 22 to page 16, line 5.

- 2.5.2 The Respondents argued that this size requirement of 200 microns was not disclosed in connection with the feature of the 80% value, but only with the 50% value. Even then the particle size was not disclosed in isolation, but in combination with specific densities of the fiber matrix as referred to in the description. In connection with the 80% value claim 13 stated that the size should exceed only 100 microns; there must have been a reason for not going beyond that value.

The Board cannot follow this reasoning. For the skilled person reading the application it is evident that the weight percentage value can be either 50% or 80% and that the limits for the particle size can be either 100, 150 or 200 microns. The latter are not exclusively

linked to the value of 50%, because from Table C (by adding up the particle size distribution values in percentage by weight of the examples I, III and V relating to superabsorbent material with AUL values equal or close to the one claimed in claim 1) it can be derived that already 60.5, 64.5 and 59.3 weight percent of the superabsorbent material has a size greater than 300 microns. After calculation with the values expressed in Table C this amounts to about 75 to 85 weight% of the superabsorbent material used in those examples having a size greater than 200 microns. A particle size limit of 150 or 200 microns for at least about 80 weight percent of the superabsorbent material is then part of the disclosure of the application as filed.

The original claims do not mention the density of the fiber matrix. Page 37, lines 17 to 21 of the original application neither mentions the density nor any other property of the article as being essential in combination with the particle size. This part of the description states that a general range of 100 to 1000 microns, more specifically 200 to 850 microns is appropriate for the particle size. For the skilled person this is a sufficient indication that the particle size requirement is not necessarily linked to the density or any other property of the fiber matrix.

3. *Sufficiency of disclosure (Article 83 EPC)*

In its letter of 24 March 2000, that is for the first time in the appeal proceedings, Respondent II raised an objection under Article 100(b) EPC directed against the embodiment of claim 3 of the main request and auxiliary requests 1, 1a, 1b and 2, and claim 2 of auxiliary

request 3. The patent allegedly did not disclose a method for determining the absorbency under load for **fibers** of superabsorbent material, only for **particulate** superabsorbent material. For the same reasons as mentioned in point 2.2 above the Board considers it premature to consider this objection in isolation in the present appeal proceedings, particularly in view of the question raised by Respondent II whether this claim should contain a reference to the method of determining the absorbency under load.

4. *Most relevant prior art - public prior use of the Merries diaper*

For an opponent to prove a public prior use he needs to provide convincing evidence in respect of:

- (a) the date on which the alleged use occurred,
- (b) what has been used and
- (c) the circumstances under which the use was made available to the public.

4.1 Date and circumstances of the prior use

The Board is satisfied that the Merries diapers, subjected to the tests performed by Respondent I as well as by the Appellant, were the subject of a public prior use before the priority date of the patent in suit, and that they came from the same production batch, for the following reasons:

- They were bought in Japan on the normal consumer market in December 1983 by Mr Hanson and were

catalogued under Number ID# D329 (see also D47).

- They all came from the same sales package (see D115).
- The core size of the different diapers tested by Respondent I as well as the Appellant points consistently to the medium sized Merries diaper STC 376 described in D49.

Therefore the Board has no doubt that the Merries diapers upon which Respondent I performed the absorbency under load tests, the diapers of which the median pore size was determined and the diapers which were subjected to X-ray examination for the dispersion of superabsorbent material came from one and the same batch, from which also came the diaper provided to the Appellant.

The Appellant has not provided counter-evidence on the basis of tests on its own Merries diaper, supporting its allegation that the Merries diapers as tested came from different production batches.

There is thus no reason to question the individual test results provided by Respondent I, even taking into account that not all tests were performed on one and the same diaper.

#### 4.2 The subject of the prior use ("what has been used")

In view of the statements made by the parties during the oral proceedings the only point of dispute relating to the technical features of the Merries diapers is the question whether all the particles of superabsorbent

material present in the Merries diapers could be considered discrete particles dispersed among the interfiber pores as claimed in claim 1. If only a certain amount of the particles in the Merries diapers could be considered "dispersed", then it must be determined whether at least 50% by weight of this amount had a particle size greater than the median pore size as claimed.

- 4.2.1 The parties and the Board consider that in view of the evidence provided in respect of the Merries diapers the most probable way in which they were produced is the following:

A layer of fluff is deposited on a drum or conveyor belt upon which layer superabsorbent material in the form of particles is distributed. A second layer of fluff is then deposited thereon, both layers then being pressed together by embossing in a grid-like pattern. See in this respect also the second affidavit of Mr Melius produced by the Appellant (D125, point 5) confirming this.

- 4.2.2 The Board considers the following to apply in such a production process: the first layer of loose fluff material will have an irregular ("furry") upper surface as it has not been calendered. Had the layer been calendered this would have been noticed by Mr Hanson who would then have drawn up his product sheet ID# D329 (see D49) of the Merries diapers bought in 1983 according to the same drawing convention used for C-folded diapers (diapers of which the layers are calendered before folding)(see for instance D113-ID# D603). From the product sheet ID# D329 it can be derived that the superabsorbent material is

concentrated in a middle region of the absorbent article.

4.2.3 As superabsorbent particles form a gel when wetted and as it is a generally accepted principle in this field of technology that "gel blocking" should be avoided, it is evident that during production of the Merries diaper the particles will be sprinkled over the surface such that they are well distributed over the surface of the first layer of fluff and that clumping is prevented as much as possible. In the Board's opinion this can be derived from the X-rays produced by Respondent I (D79 and D29) and by the Appellant (D91-2SCR.1-3) of the x-y plane of the Merries diaper. In the x-y plane of the diaper the particles can therefore be considered to be "dispersed".

4.2.4 Lying on the "furry" upper surface of the first fluff layer, the particles of superabsorbent material that do not penetrate into the first layer of fluff due to a size larger than the pores will be located at different positions in the z-direction (=perpendicular to the diaper surface) of the diaper. When the second layer of loose fluff is deposited thereon, the loose fluff fibers will fall on top of and around the particles and will enclose them. From the X-rays of the x-y plane of the diaper in D79, D29 and D91 as well as D42 (the latter concerning a calculation of the surface (38.5%) of the Merries diaper being occupied by the superabsorbent particles if these were disposed in a layer of one particle thickness) it is evident that there is sufficient space around the particles to receive fibers of the second layer onto the first layer. During embossing the two fluff layers will be compressed, resulting in the fibers being compacted



around the particles. A number of particles will be pressed further down into pores existing in the fiber matrix and other particles will remain in the pocket built up around the particle by the fibers of the first and second layer, the pocket reducing its volume by the compression during embossing. In the finished product this pocket will not be distinguishable from the pores in the fiber matrix in the same way as pores (without particles) resulting from the coming together of the fibers of the first and the second layer cannot be distinguished from pores elsewhere in the first or the second layer.

- 4.2.5 After the second layer has been deposited on the first layer and embossing has taken place the particles that remained on the furry surface of the first layer as well as the small particles that found their way into the first layer will in the end have different positions in the z-direction of the **finished** product. As the disposition of the particles has an extension in the z-direction, the particles have to be considered "dispersed" in that direction as well. See for example the X-rays of the x-z plane through the Merries diapers (D104 and D91-2SCR.5) showing the particles being disposed in a central region of the absorbent article. The thickness of this region clearly extends over a plurality of particles.

The result is that in the final fiber matrix the particles are dispersed in all directions (x, y and z). As there are pores all around the particles, including pores (=pockets) in which particles are trapped, **all** these particles are to be considered "dispersed among the interfiber pores" as claimed.

4.2.6 At least 50% by weight of the total amount of superabsorbent particles in these diapers has a size greater than the median pore size of the porous fiber matrix when wet (see D43, page 11 as well as D77, page 12 and D85). In this respect it is irrelevant whether the absorption or the desorption cycle of the Burgeni test is used to determine the median pore size of the matrix, because more than 50% by weight of the superabsorbent material in the Merries diapers has a particle size which is greater than the median pore size of the fiber matrix, **irrespective** of the cycle used in determining this pore size.

4.2.7 The Appellant contended that not all the particles in the Merries diapers could be considered "dispersed **discrete** particles" as it was clear from the X-rays that particles remained together or were pressed together during embossing, and thus would not be isolated in the pocket formed by the fibers around them.

However, such a distinction does not follow from the disclosure of the patent in suit, as the patent itself refers to the superabsorbent material being "**generally** dispersed in the porous fiber matrix" and when "in the form of discrete particles the particles are **generally** located within the pores of the fiber matrix", see page 5, lines 1 to 3. Such wording allows some of the particles to not be "dispersed discrete particles" or not be contained on their own in a pore.

Secondly, if particles remain together in a pocket, they will still be discrete particles, as long as they do not stick together. In that case these particles will also be "dispersed among the interfiber pores". It

is to be noted that the wording of claim 1 does not specify that each particle is in its own pore.

Thirdly, if there is clumping (i.e. sticking or conglomerating together) of particles, the clumped particles will together form one particle, in which case this one particle will also be one of the particles "dispersed among the interfiber pores".

In fact, the resulting fiber matrix of the Merries diaper, according to the production process described above, corresponds to an embodiment of D6 (see Figures 7 and 11 and column 6, lines 54 to 65), in which the superabsorbent particles have a distribution gradient in the z-direction of the article. This specific embodiment has the superabsorbent material concentrated in a middle region of the absorbent article, no particles being present over a certain distance inward from the body- as well as the garment side of the fiber matrix.

For a considerable number of its embodiments the patent in suit (see Examples I, II, VII to IX) relies on D6 as providing the information on how to produce absorbent articles with the superabsorbent particles "disposed in a z-direction gradient in the batt", i.e. including the embodiment corresponding to the Merries diaper. The other embodiments all relate to the superabsorbent particles being homogeneously dispersed in the airlaid batt. As the subject-matter of the claim is not limited to a dispersion of particles **throughout** the fiber matrix all embodiments discussed in the patent in suit fall under the wording of claim 1.

In respect of the arrangement of superabsorbent

particles in the absorbent article there is thus no difference between the Merries diaper and the absorbent composite as claimed in the patent in suit.

- 4.2.8 The Appellant also suggested that Respondent I should have established how the production process of the Merries diapers was actually performed, to prove that **all** superabsorbent material was to be considered as dispersed among the interfiber pores. If not all superabsorbent material could be considered dispersed Respondent I should have established the weight distribution of only those particles of superabsorbent material which had actually migrated into the fiber matrix.

This argumentation cannot be followed for the following reasons:

Since the Appellant and Respondent I are in agreement as to the most probable production process resulting in the Merries diapers, and the Board has no reason to disagree therewith, there is no necessity of requiring further proof as to the actual production process carried out by Kao Soap K.K. for the Merries diapers. It would also result in imposing a burden of proof upon one of the parties which can hardly be met; one cannot expect a company to request its competitor to divulge details of its production process (see further point 5 of this decision). Even if it were to receive such information it would not be guaranteed that it would be complete and correct.

Moreover, the discussion in respect of the most probable production process of the Merries diaper merely serves to determine the diaper's technical

features for comparison with the features of "product" claim 1. Once these have been established the process features are no longer relevant.

Since **all** particles present in the Merries diapers are considered discrete particles dispersed among the interfiber pores of the matrix (see 4.2.5), the determination whether 50% by weight of these dispersed discrete particles has a size in the unswollen condition which is greater than the median pore size of the fiber matrix when wet can be performed on the total amount of superabsorbent material present in the Merries diapers.

4.2.9 Also in respect of the other features of the Merries diaper the Board does not differ from the conclusions drawn by the parties. The superabsorbent material can absorb at least 27 milliliters of an aqueous solution of sodium chloride containing 0.9 weight percent sodium chloride per gram of superabsorbent material while under a restraining pressure of 21000 dynes per square centimeter when determined under the AUL test method as described in the description (see D77, page 29 and D43, page 11).

5. *Standard of proof required in respect of the alleged prior use*

5.1 The Appellant argued that the prior public use of the Merries diaper was not proven by the Respondent "up to the hilt", as there existed at least some doubt as to whether **all** particles in the Merries diapers were actually discrete particles dispersed among the interfiber pores. It referred in this respect to the standard of proof applied in T 472/92 (supra),

subsequently referred to *inter alia* in decisions T 97/94 (OJ 1998, 467) and T 848/94 (not published in the OJ), which in its opinion required more than just the "balance of probabilities" being in favour of one of the parties.

The Appellant also referred to T 750/94 (OJ 1998, 32), which in its opinion extended the law further, making clear that a European patent should not be revoked "unless the grounds for revocation are fully and properly proved: that is it must be proved "up to the hilt" - see decision T 472/92 .... ".

- 5.2 In the Board's opinion, the principle applied in T 472/92 and the subsequent decisions referring thereto concerns a situation where the opponent had the power to obtain all the evidence in support of an alleged public prior use. In such a case it may be impossible for the patentee to have access to counter-evidence proving that the prior use did not take place in the form presented by the opponent. Most of these cases relate to sale and delivery of a product by the opponent itself.

In the present case the situation is different: the Merries diaper is not a product of Respondent I, but of a Japanese competitor, Kao Soap K.K. and was bought on the normal consumer market by the firm MTS of Mr Hanson, specialised in buying diapers all over the world and keeping these at the disposal of anybody interested in them (see D115). In this respect the Appellant is not in a worse, but in an identical situation as Respondent I: MTS provides any interested party with diapers, as long as it has them in stock and the required price is paid. Moreover, Respondent I

provided the Appellant with one Merries diaper so that it could perform its own tests. The Appellant thus did have access to Merries diapers and thus had the possibility of providing evidence in support of its contentions.

In the present case there is thus no reason to apply the stricter requirements regarding the standard of proof as developed in T 472/92.

- 5.3 According to the case law of the Boards of Appeal (see e.g. T 270/90, OJ 1993, 725) each party bears the burden of proof for the facts it alleges. If one party furnishes convincing proof of a fact, the burden of proof for the other party's contrary assertion shifts to the latter.

The counter-evidence produced by the Appellant in support of its contention that the particles in the Merries diapers are disposed in a layer on top of the first layer of fluff, the latter having been calendered before or after application of the particles of superabsorbent material to subsequently form a C-folded absorbent pad, is not considered convincing for the following reasons:

As already mentioned, if calendering had been carried out on the first layer, this would have been noticeable in the product and Mr Hanson would not have drawn up the product sheet ID# D329 the way he did (see point 4.2.2 above). Further, the samples cut from the Merries diaper of the Appellant, see D91, point 9, remained intact while cutting them into 1 cm wide strips. Had the layer been calendered the samples would have fallen apart more easily. Finally, it would not

have required Mr Melius to use a knife to separate the two layers from each other (see D125).

The documentary evidence produced by the Appellant on appeal (D107 to D114) in support of its contention that it was usual in Japan at the time the Merries diapers were put on the market to produce diapers such that the first layer was calendered and then folded over to form a C-form pad is to be considered circumstantial evidence as it does not relate to tests performed on the Merries diapers themselves. In any case, contrary to the Appellant's assertion, it was also known in Japan at that time to blend superabsorbent particles into fluff before depositing the fluff on the belt or the drum, or to depositing superabsorbent particles on an uncalendered layer of fluff, see D117 to D119 produced by Respondent I.

The computer tomographs referred to in D91 to D93 purporting to prove that the particles of superabsorbent material are disposed in a layer between two separate layers of fluff, no fibers being present around these particles, are not accepted as being relevant evidence as they have been made on one single very small sized sample (1.3 cm long, 1 cm wide) of the Merries diaper. Further the photograph 2SCR.12 in D122 (which is different from 2SCR.12 in D92) shows fibers between and around the particles of superabsorbent material.

- 5.4 The Board observes that T 750/94 related to an ex-parte case, i.e. an appeal against the refusal by the Examining Division of a European patent application, based on evidence collected by the Examining Division itself regarding the date of public availability of a



certain disclosure. The present case is different as it is an inter-partes (opposition) case.

It is true that T 750/94 also refers to "revocation" of a patent, i.e. opposition proceedings. However, in view of the above this has to be considered an *obiter dictum*. Such conclusions should not be considered in isolation from the rest of the decision, which states that "a finding that a .... use forms part of the state of the art for the purposes of Article 54(2) EPC should only be made if the available evidence, when subjected to a strict and careful evaluation, establishes that a prior .... use is **likely** to have occurred" (emphasis added by the Board). The latter is fully in line with the case law of the Boards of Appeal on the standard of proof as established e.g. by T 270/90 (*supra*), which states:

"When arriving at their decisions, the Boards, in addition to exercising their inquisitorial powers (should this be necessary), decide the issues before them on the basis of the evidence adduced by the parties. Their decision need not, and in most cases could not, be based on absolute conviction, but has, instead, to be arrived at on the basis of the overall **balance of probability**, in other words on the footing that one set of facts is more likely to be true than the other....".

For the above reasons the Board has come to the conclusion that the facts as presented by Respondent I are more likely to be true than those presented by the Appellant and that therefore the prior use of the Merries diaper is sufficiently established in terms of the standard of proof to be applied as well as regards

its technical features.

6. *Main request - Novelty of the subject-matter of claim 1 in respect of the Merries diapers (Article 54 EPC)*

In view of the fact that the Merries diapers have all the features as claimed in claim 1 (see points 4.2.3 to 4.2.9 above) and that these diapers were available to the public before the date of priority of the patent in suit (see point 4.1 above) the subject-matter of claim 1 lacks novelty. The main request is therefore not allowable.

7. *Auxiliary requests 1, 1a, 1b - Novelty of the subject-matter of the respective claims 1 (Article 54 EPC)*

- 7.1 The subject-matter of the respective claims 1 of these requests differs principally from that of claim 1 of the main request in that **at least about 80%** (auxiliary requests 1 and 1a) or **at least 80%** (auxiliary request 1b) instead of **at least about 50%** by weight of the superabsorbent material should fulfil the particle size/median pore size requirement.

The claim does not mention which method should be employed to determine the median pore size of the fiber matrix. Because the patent in suit only refers to the Burgeni test (D2) as **one** of the possibilities any method will do for determining this parameter.

- 7.2 Nothing is mentioned in the patent in suit about whether the determination of the median pore size should be performed on the adsorption or on the desorption cycle of tests for determining the median pore size.

7.3 The Appellant argued that the wording "the fiber matrix **when wet**" as claimed should be interpreted as "the fiber matrix when it is **first wetted**", as an indication that an adsorption cycle should be used, in which a dry fiber matrix is absorbing liquid, the pore size being determined of the pores changing from a dry to a wet state. This submission was based on the reference in the patent in suit, page 14, line 17 to the particles of superabsorbent material having a size larger than the interfiber spaces which were occupied by the particles when the fibers were "first wetted".

However, the patent in suit refers only once to the fibers being "first wetted". The other, more frequent, references to the pore size all employ terms such as "when wet", "in a wetted condition" or "when wetted".

What most probably happens in the composite of the claimed invention is that the particles, because of their specific size relative to the pore size, push apart the fibers as soon as they begin to swell. Therefore the Board considers these references as directing the skilled person to a determination of the pore size in a situation where the fibers are already wet.

Firstly, the skilled person will have in mind the practical situation in a diaper when reading the disclosure of the patent in suit. As superabsorbent material does not swell immediately on contact with liquid, but takes some time to do so and the practical situation in a diaper is such that a discharge of urine takes place in a relatively short period (a few seconds), the fibers will already be wet by the time the superabsorbent material begins to swell.

Secondly, the pore size in the adsorption cycle is not representative of the actual pore size "when wet", as only the pore size of those pores is determined which are filled with liquid, not of the larger pores which are still empty, because they only fill up later in the adsorption cycle.

Thirdly, one of the important aspects of the patent in suit is the capability to imbibe liquid faster during multiple fluid surges (see page 11, line 56 to page 12, line 40 of the patent in suit). In this light the term "when first wetted" may well be interpreted as meaning "when first wetted in a cycle of plural surges of liquid".

- 7.4 The Appellant argued further that even though the Burgeni test (D2) was mentioned as one of the possibilities it was evident for the skilled person that the adsorption cycle of that test should be used, as the patent in suit referred to D2 for the determination method of the median pore size and according to the Appellant the part of this document discussing Figure 3 implied the use of the adsorption cycle.

It is to be noted that the reference to D2 in the patent in suit is specific only in respect of the compressed and uncompressed air-laid Kraft pulp fluff batts discussed therein. In contrast thereto Figure 3 of D2 relates to the capillary sorption cycle in an uncompressed rayon fiber web, not in Kraft pulp fluff batts. Furthermore, the passage discussing Figure 3 is not specifically related to the question which of the cycles applies. Therefore the skilled person, even if he would be looking for information regarding which

cycle to apply, would not find a suitable answer when considering this passage of D2.

- 7.5 Consequently, in the absence of a clear indication in the patent or of an instruction apparent to the skilled person, the Appellant will have to accept any one of the values determined for the median pore size of the fiber matrix of the Merries diapers in the tests by Respondent I, irrespective of which cycle the determination was done on.

According to D43 (page 11) the median pore size on the desorption cycle of the fiber matrix of the Merries diapers is 80 or 88 micrometer, at 0,2 and 0,068 psi, respectively. According to D85, Table 5, this value is 76 micrometers on the desorption cycle (at 0,2 psi). The particle size which at least 80% by weight of the superabsorbent material present in the Merries diapers has is 150 micrometers (D43A, page 19), 139 micrometers or 145 micrometers (D77, page 12). There is no reason call these results into question.

In respect of this feature the Appellant has not produced test results on the Merries diaper in its possession. Thus there is also no counter-evidence available which would contest the above mentioned values determined by Respondent I.

Therefore the Board is satisfied that the Merries diapers also have the feature that at least 80% by weight of the superabsorbent material have a size which is greater than the median pore size of the fiber matrix when wet.

- 7.6 Auxiliary request 1a

Even if the Appellant were correct in saying that the adsorption cycle should be used when determining the median pore size, the result would not be different for the subject-matter of claim 1 of this auxiliary request 1a claiming "at least **about** 80% by weight".

The median pore size in the adsorption cycle is at its lowest 160 micrometers (D43, page 11). According to D43A (linear interpolation of the values of page 19) 77,4% by weight of the superabsorbent material in the Merries diapers has a size greater than this median pore size. According to D77 (page 12) this figure amounts to 75,7% (linear interpolation of the values of the table for method 2). Both values are considered to fall within the range around 80% implied by "**about** 80%", as claimed in claim 1 of this request, particularly since values obtained by linear interpolation between values for quantities determined on a limited number of sieves (which is by nature a "stepwise" determination) normally do not correspond to the actual values in the distribution of particle sizes present in the superabsorbent material. The same applies to the determination of the median pore size in the fiber matrix, which also results from linear interpolation of measured values.

This is all the more so when the particle size and the pore size distribution is represented graphically by curve fitting of the values measured. Reading off the relevant values from such graphs would then be subject to reading errors.

It follows from the above considerations that the Merries diapers have superabsorbent material present in the form of dispersed discrete particles of which about

80% by weight has a size greater than the median pore size of the fiber matrix when wet. The subject-matter of claim 1 of auxiliary request 1a, distinguishing itself from claim 1 of the main request **only** by the amount of 50% being replaced by 80%, thus does not present novelty over the Merries diapers.

7.7 Auxiliary request 1

Claim 1 of auxiliary request 1 differs from claim 1 of auxiliary request 1a further in that it is **not** specified that the "at least about 80% by weight" applies to the **dispersed discrete particles** of superabsorbent material.

As **all** superabsorbent material present in the Merries diaper is considered to be in the form of dispersed discrete particles (see points 4.2.3 to 4.2.9 above), the absence of this distinction does not affect the conclusion reached in point 7.6 above. The subject-matter of claim 1 of auxiliary request 1 thus also lacks novelty over the Merries diapers.

7.8 Auxiliary request 1b

Claim 1 of auxiliary request 1b differs from claim 1 of auxiliary request 1 in that the word "about" in the sentence "about 80% by weight..." is deleted.

In view of the fact that the Board considers the question of which cycle (adsorption or desorption) to apply when determining the median pore size as not being relevant, see points 7.1 and 7.2, the absence or the presence of the word "about" has no influence on the outcome of the examination as to novelty of the

subject-matter of claim 1 of auxiliary request 1b.

Again, even if the Appellant were correct in saying that the adsorption cycle of the Burgeni test applies, the values determined by linear interpolation for the size of the particles of superabsorbent material, as well as the median pore size in the Merries diapers, are so close to the values claimed that their ranges of accuracy overlap.

The subject-matter of claim 1 of auxiliary request 1b therefore lacks novelty over the Merries diapers.

In this respect the question raised by Respondent I, as to whether this claim 1 complies with the requirements of Article 123(2) EPC, because the application as filed consistently mentions the percentages by weight as being "about 50%" or "about 80%", needs no further discussion.

In view of the lack of novelty of the subject-matter of their respective claims 1 the auxiliary requests 1, 1a and 1b are not allowable.

8. *Auxiliary request 2 - Novelty of the subject-matter of claim 1 (Article 54 EPC)*

Claim 1 of auxiliary request 2 differs from claim 1 of the main request further in that the particle size of at least about 80% by weight of the dispersed discrete particles should be greater than **200 micrometers**.

According to D43A (linear interpolation of the values of page 19) only 65% by weight of the superabsorbent material in the Merries diapers has a size greater than



200 micrometers. According to D77 (page 12) this figure amounts to 64% (linear interpolation of the values of the table for method 2).

It cannot be argued that these weight percentages fall within the range of accuracy implied by the wording "about 80%". The subject-matter of claim 1 of auxiliary request 2 is thus novel.

9. Since lack of novelty of the subject-matter of claim 1 filed with letter of 10 February 1995 led to the Opposition Division's decision to revoke the patent, no examination of the subject-matter of this claim in respect of the requirements of Article 56 EPC (inventive step) or of the patentability of the subject-matter of the present independent claims 2 and 3 has been carried out by the Opposition Division. The Board therefore considers it appropriate to remit the case for continuation of the opposition proceedings in respect of the further grounds of opposition raised. Attention is drawn to the considerations in points 2.2 and 3 of the Reasons of this decision.

## **Order**

### **For these reasons it is decided that:**

1. The decision under appeal is set aside.
2. The main request and the auxiliary requests 1, 1a and 1b are rejected.
3. The case is remitted to the first instance for continuation of the opposition proceedings.

The Registrar:

The Chairman:

M. Patin

P. Alting van Geusau