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**Datasheet for the decision
of 14 October 2009**

Case Number: T 0003/07 - 3.3.01

Application Number: 00970996.5

Publication Number: 1221851

IPC: A01N 59/06

Language of the proceedings: EN

Title of invention:

Antiviral compositions for tissue paper

Patentee:

THE PROCTER & GAMBLE COMPANY

Opponent:

KIMBERLY-CLARK WORLDWIDE, INC.

Headword:

Antiviral aluminium salts/PROCTER & GAMBLE

Relevant legal provisions:

EPC Art. 100(b)
RPBA Art. 13(1)(3)

Relevant legal provisions (EPC 1973):

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Keyword:

"Main request - no objections under Article 123(2)(3), 84, 54
and 56 EPC"

"Main request - insufficiency of disclosure (no)"

Decisions cited:

G 0002/88, T 0409/91, T 0435/91

Catchword:

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Case Number: T 0003/07 - 3.3.01

DECISION
of the Technical Board of Appeal 3.3.01
of 14 October 2009

Appellant:
(Patent Proprietor)

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Representative:

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Respondents:
(Opponent)

KIMBERLY-CLARK WORLDWIDE, INC.
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Decision under appeal:

Decision of the Opposition Division of the
European Patent Office posted 31 October 2006
revoking European patent No. 1221851 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: P. Ranguis
Members: G. Seufert
C.-P. Brandt

Summary of Facts and Submissions

- I. The Appellant (Proprietor of the patent) lodged an appeal on 29 December 2006 against the decision of the Opposition Division dated 31 October 2006 on the revocation of the European patent No. 1 221 851, and filed a written statement on 9 March 2007 setting out the grounds of appeal.
- II. In this decision the following numbering will be used to refer to documents:
- (1) GB-A-1 424 692
 - (2) WO-A-84/02262
 - (3) WO-A-99/45771
 - (4) EP-A-835655
 - (6) WO-A-97/27837
 - (7) WO-A-94/04167
 - (8) DE-A-27 15 711
 - (9) US-A-5 429 819
- III. Opposition was filed by the Respondent (Opponent) requesting revocation of the patent in its entirety on the grounds of lack of novelty and inventive step (Article 100(a) EPC in combination with Article 52(1), 54 and 56 EPC) and insufficiency of disclosure (Article 100(b) EPC in combination with Article 83 EPC).
- IV. The decision under appeal was based on the then pending main, first, second, third, fifth and seventh auxiliary requests. The fourth and sixth auxiliary requests had been abandoned by the Patent Proprietor/Appellant.

The Opposition Division held that the subject-matter of the main request was not novel over the disclosure of documents (1) to (3). The first and fifth auxiliary request were held to be anticipated by document (3) and the second, third and seventh auxiliary request to violate the requirement of Article 123(2) EPC.

- V. With the statement of grounds of appeal the Appellant filed a main request and auxiliary requests 1-10, the main request and the first auxiliary request being the same as the main and auxiliary request on which the Opposition Division based its decision.

- VI. In response to the Respondent's reply to the statement of grounds of appeal the Appellant filed the auxiliary requests 3a, 4a, 6a, 7a, 8a, 9a and 10a with letter of 13 December 2007. With letter of 16 September 2008 it submitted the auxiliary requests 1a and 2a.

- VII. At the beginning of the oral proceedings before the Board, which took place on 14 October 2009, the Appellant filed a complete set of its requests, replacing its main request by the previous auxiliary request 2a, abandoning the auxiliary requests 1 and 2 previously filed and renumbering the remaining requests in the following order:

Main request	previous auxiliary request 2a
1 st auxiliary request	previous auxiliary request 1a
2 nd auxiliary request	previous auxiliary request 3
3 rd auxiliary request	previous auxiliary request 4
4 th auxiliary request	previous auxiliary request 6
5 th auxiliary request	previous auxiliary request 7
6 th auxiliary request	previous auxiliary request 8

7 th auxiliary request	previous auxiliary request 9
8 th auxiliary request	previous auxiliary request 10
9 th auxiliary request	previous auxiliary request 3a
10 th auxiliary request	previous auxiliary request 4a
11 th auxiliary request	previous auxiliary request 6a
12 th auxiliary request	previous auxiliary request 7a
13 th auxiliary request	previous auxiliary request 8a
14 th auxiliary request	previous auxiliary request 9a
15 th auxiliary request	previous auxiliary request 10a

Admissibility of the requests was discussed and the Board informed the parties that the requests were admitted into the procedure.

VIII. Claim 1 of the main request reads as follows:

1. Use of a water soluble metal ion for killing influenza virus and rhinovirus in an antiviral tissue product,
said antiviral tissue product comprising:
a) a fibrous ply and
b) an antiviral composition comprising said water soluble metal ion;
wherein said water soluble metal ion has at least one hydroxide formation constant with a value of at least 10^{12} wherein said water soluble metal ion is aluminium, copper, or mixtures thereof and preferably wherein said aluminium is aluminium sulfate, potassium aluminium sulfate, aluminium nitrate, aluminium chlorohydrate, aluminium zirconium tetra-chlorohydrate glycine, or combinations thereof and said copper is copper sulfate, copper chloride, copper nitrate, copper acetate, copper bromide, copper iodide, or mixtures thereof.

IX. After discussion of the main request the Board informed the parties of its conclusion that the subject-matter of claim 1 of the main request filed at the beginning of the oral proceedings did not involve an inventive step over documents (3) and (9) taken in combination. The Board furthermore indicated that this finding appeared to apply to all the pending auxiliary requests.

X. The Appellant then withdrew all pending auxiliary requests and filed auxiliary requests 1-4.

The set of claims of the auxiliary request 1 reads as follows:

1. Use of a water soluble metal ion for killing influenza virus and rhinovirus in an antiviral tissue product,

said antiviral tissue product comprising:

a) a fibrous ply and

b) an antiviral composition comprising said water soluble metal ion;

wherein said water soluble metal ion has at least one hydroxide formation constant with a value of at least 10^{12} wherein said water soluble metal ion is aluminium, and preferably wherein said aluminium is aluminium sulfate, potassium aluminium sulfate, aluminium nitrate, aluminium chlorohydrate, aluminium zirconium tetra-chlorohydrate glycine, or combinations thereof.

2. The use of Claim 1 wherein said antiviral composition further comprises a polyhydric alcohol and preferably wherein said polyhydric alcohol is glycerine.

3. The use according to any of the previous claims wherein said antiviral composition further comprises an organic acid, preferably wherein said organic acid is a carboxylic acid and more preferably wherein said carboxylic acid is pyrrolidone carboxylic acid, citric acid, malic acid, lactic acid, glutaric acid, succinic acid, or combinations thereof.

4. The use according to any of the previous claims wherein said antiviral tissue product further comprises a lotion.

5. The use according to Claim 4 wherein said lotion further comprises an antiviral composition whereby said antiviral composition comprises from about 0.05% to 80% by weight of said lotion and wherein said antiviral composition is a water soluble metal ion.

6. Use according to claim 1, wherein said fibrous ply has a first surface and a second surface whereby said second surface is oppositely disposed with respect to said first surface, and characterized in that said first surface includes said antiviral composition and said second surface includes an antiviral composition wherein said antiviral composition is pyrrolidone carboxylic acid, citric acid, salicylic acid, malic acid, glutaric acid, succinic acid, or mixtures thereof.

7. The use of Claim 6 wherein said antiviral composition further comprises a polyhydric alcohol, preferably wherein said polyhydric alcohol is glycerine.

Auxiliary request 2 corresponds to the sixth auxiliary request previously filed (see point VII above) having three claims, independent claim 1 reading as follows:

1. Use of an antiviral tissue product for killing influenza virus and rhinovirus, said antiviral tissue product comprising:
 - a) a fibrous ply and
 - b) an antiviral composition comprising a water soluble metal ion said water soluble metal ion has at least one hydroxide formation constant with a value of at least 10^{12} wherein said water soluble metal ion is aluminium, copper, or mixtures thereof and preferably wherein said aluminium is aluminium sulfate, potassium aluminium sulfate, aluminium nitrate, aluminium chlorohydrate, aluminium zirconium tetra-chlorohydrate glycine, or combinations thereof and said copper is copper sulfate, copper chloride, copper nitrate, copper acetate, copper bromide, copper iodide, or mixtures thereof, wherein said antiviral tissue product does not comprise an organic acid.

Auxiliary request 3 corresponds to the eighth auxiliary request previously filed (see point VII above). It is distinguished from the auxiliary request 2 in that all references to copper compounds have been deleted from the claims.

Auxiliary request 4 corresponds to the seventh auxiliary request previously filed (see point VII). It differs from the auxiliary request 2 in that the following feature has been added:

"wherein said antiviral composition comprises a surfactant"

XI. After the matter was discussed the Board informed the parties of its conclusion that the first auxiliary request met the requirement of the EPC. When summarising the requests of the parties and before closing the debate the Appellant withdrew the main request as well as the auxiliary requests 2-4 and maintained the first auxiliary request as the sole and main request.

XII. The arguments submitted by the Appellant to the extent that they are relevant for this decision can be summarised as follows:

Concerning the late filing of the main request the Appellant submitted that it was a simple limitation of the previously discussed main request and filed as a direct reaction to the discussion which took place during the oral proceedings before the Board. It concerns merely the deletion of the copper compounds, which in view of the previous discussion could not have surprised the Respondent.

The Respondent's objection under Article 100(b) EPC was more related to a clarity issue than to insufficiency of disclosure. The problem with the upper limit is obviously a mistake, a fact which would be immediately realised by the skilled person. It does not concern the making and using of the compositions.

XIII. The arguments submitted by the Respondent to the extent that they are relevant for this decision can be summarised as follows:

The Respondent contested the admissibility of the main request as late filed. The Respondent further declared that it had no objection under Articles 123(2)(3), 84, 54 and 56 EPC but maintained the objection under Article 100(b) EPC against claim 5 as set out in the notice of opposition. The Respondent argued that it would appear to be impossible to prepare a lotion comprising 80% metal ions, since such a value cannot be achieved for all the salts mentioned in claim 1 of the main request where the metal ion generally accounts for less than half of the weight of the metal salt. The patent in dispute therefore lacks sufficiency of disclosure.

XIV. The Appellant requested that the appeal be set aside and that the patent be maintained on the basis of the sole and main request (claims 1-7, previously auxiliary request 1) filed during the oral proceedings of 14 October 2009.

The Respondent requested that the appeal be dismissed.

XV. At the end of the oral proceedings the decision of the Board was announced.

Reasons for the Decision

1. The appeal is admissible.

Sole and main request

2. *Admissibility of the late filed sole and main request*

2.1 The sole and main request (previously auxiliary request 1) was filed by the Appellant during oral proceedings immediately after he has been informed of the Board's conclusion that the main request previously on file did not involve an inventive step in view of documents (3) and (9) taken in combination (see point IX above).

2.2 The new sole and main request is based on the main request previously filed (see point VII above) which itself was filed as auxiliary request 2a as early as 16 September 2008, i.e. one year before the oral proceedings, and differs from the previously filed main request by a simple limitation, namely the removal of all references to copper compounds. This limitation was a direct response to the discussion before the Board during oral proceedings and represented an attempt by the Appellant to address the objection of the Respondent and the conclusion of the Board concerning the issue of inventive step. Furthermore, in the Board's opinion the new main request does not raise novel and complex issues, which would justify the non-admittance of this request.

2.3 The Board further notes that the Respondent, who did not contest the admissibility of the previously filed auxiliary request 2a on which the sole and main request is ultimately based up to the oral proceedings before the Board, has had the opportunity at least during a period starting from 16 September 2008 to prepare its

case against the subject-matter of the present main request, which was encompassed entirely by the previous auxiliary request 2a, and to submit arguments, facts or evidence in support thereof. The filing of this new main request cannot, therefore, be considered as an attempt to surprise the Respondent.

2.4 Hence, the Board in exercising its discretion to accept amended claims even at a late stage of the proceedings (Article 13(1) and (3) RPBA) admits the new main request into the procedure.

3. *Procedural matters*

3.1 At the oral proceedings before the Board, the Respondent did not raise any objections under Articles 123(2)(3), 84, 54 and 56 EPC against the sole and main request (see point XIII above). However, it maintained its objection under Article 83 EPC against claim 5 of the main request.

3.2 However, in case of amendments of the claims or other parts of a patent in the course of the opposition or opposition/appeal proceedings, such amendments are to be fully examined as to their compatibility with the requirements of Articles 123(2) and (3) and 84 EPC.

3.3 Furthermore, since the patent was opposed for lack of novelty and inventive step and was revoked for lack of novelty, the Board has the duty to verify whether those grounds of opposition prejudice the maintenance of the patent in suit on the basis of the sole and main request.

4. *Amendments*

4.1 The ability of the claimed water soluble metal ions to kill influenza virus and rhinovirus is clearly and unambiguously disclosed in the application as filed, see for example page 1, lines 5-10, page 4, lines 18-19, and examples.

4.2 Claim 1 as granted refers to an antiviral tissue product comprising an antiviral composition comprising specific water soluble aluminium and/or copper ions. Although the claim as granted is not limited to the use of the metal ions as the antiviral ingredient, this use is nevertheless included in the scope of the claims and evident from the description.

In such circumstances the Board is of the opinion that the use of the soluble aluminium ions as antiviral agent, which is the subject-matter of the claims of the main request, was already in the scope of the granted product when interpreted in the light of the description. Moreover, the antiviral activity has been further limited to the killing of influenza virus and rhinovirus. Claim 1 of the main request does, therefore, not extend the scope of protection and is admissible according to the decision G 2/88 (OJ EPO, 1990, 93).

4.3 The Board therefore concludes that the amendments made to claim 1 comply with the requirement of Articles 123(2) and (3) EPC.

4.4 In the Board's opinion the wording of claim 1 of the main request clearly refers to the killing of specific viruses within the tissue product. The Board cannot see

any ambiguity, in particular with respect to Article 52(4) EPC.

5. *Novelty*

- 5.1 Claim 1 of the main request relates to the use of specific, in general known, aluminium compounds for killing influenza virus and rhinovirus. This technical effect is to be interpreted as a functional technical feature of the claim. Thus, the claim has to be regarded as novel if this functional technical feature has not been previously made available to the public by any of the means set out in Article 54(2) EPC, i.e. by a piece of prior art disclosing **directly and unambiguously** the subject-matter in question, even though the technical effect might have inherently taken place in the course of carrying out what had previously been made available to the public (G 2/88, OJ EPO 1990, 93, point 10.3 of the reasons).
- 5.2 None of the cited documents, in particular none of the documents (1) to (3), which the Opposition Division considered as anticipating the subject-matter of the then pending requests, discloses the use of an aluminium ion for killing influenza virus and rhinovirus. Document (1) discloses the use of aluminium salts as antiperspirants, i.e. compounds reducing perspiration thus reducing the moist climate in which bacteria thrive. A similar use is described in document (2). Document (3) discloses **antibacterial and/or antiviral** tissue paper (see page 15, last three lines). As antiviral compounds only organic acids are mentioned. As **antibacterial** compounds a large variety of structurally different compounds is listed, among them

antibacterial metal salts, for example aluminium salts. Antibacterial properties are also disclosed in document (4) for an agent comprising an aluminium salt of hinokitol and/or a complex compound of hinokitol with an aluminium compound. Documents (6) - (9) disclose the antiviral activity of bismuth or transition metals like copper, iron, silver, zinc ions.

It follows from the above that for the claimed aluminium ions the functional technical effect of killing influenza virus and rhinovirus was not available to the public and, therefore, confers novelty to claim 1 of the main request, which was not disputed by the Respondent.

6. *Inventive step*

6.1 The patent in suit is directed to the use of specific aluminium salts for killing influenza virus and rhinovirus in an antiviral tissue thereby suppressing the transmission of the virus and ultimately the spreading of influenza and common cold.

6.2 Document (3) refers to a tissue paper having a lotion composition comprising A) an antimicrobial, B) at least one hydrophilic solvent, C) at least one skin conditioning agent and D) at least one hydrophilic surfactant (see claim 1 of document (3)). The term "antimicrobial" according to this document refers to an antiviral, an antibacterial or a combination of both (see page 15, last three lines). Organic acids are mentioned as suitable antivirals against rhinovirus and influenza virus (see pages 16 - 18, in particular page 17, lines 14-16). As antibacterials a large variety of

compounds is listed on pages 18 - 24 including pyrithiones, phenolic compounds, benzoic esters, halogenated carbanilides, phospholipids, natural essential oils, antibacterial metal salts, like aluminium, zirconium, silver or copper salt, etc. According to document (3) viruses coming into contact with the tissue comprising the antiviral agent, for example through virus infected mucus, are killed and the transmission of the viruses and the spreading of influenza and cold are suppressed (see document (3), page 1, lines 1-4, page 2, lines 19-24).

In accordance with the opinion of both parties expressed in the discussion at oral proceedings before the Board, the Board considers document (3) as the closest state of the art and, hence, takes it as the starting point for the assessment of an inventive step.

- 6.3 In the light of this closest prior art the Board sees the problem to be solved by the present invention as the provision of an alternative way of suppressing virus transmission and spreading of influenza and cold.

As the solution to this underlying technical problem the patent in suit proposes the use of the claimed aluminium ions for the killing of influenza virus and rhinovirus in the tissue.

In view of the data provided in table 1 on page 18 of the patent in suit, the Board is satisfied that this problem is solved.

- 6.4 It remains to be decided whether or not the proposed solution is obvious in view of the prior art.

6.4.1 As mentioned in point 6.2 above, document (3) refers solely to organic acids as suitable antiviral agents. The only reference made in that document to aluminium compounds is in connection with their suitability as antibacterial agents. No indication as to a potential antiviral activity can be found in document (3). Thus, document (3) on its own does not render the claimed subject-matter obvious.

6.4.2 The Board further notes that none of the other prior art documents discloses the use of an aluminium compound as antiviral agent or provides the skilled person with an incentive to use aluminium compounds for this purpose. This has also been admitted by the Respondent. Consequently, the skilled person wishing to solve the aforementioned technical problem had no motivation to substitute the known organic acids by the claimed aluminium ions.

6.5 For the reasons set out above the Board concludes that the subject-matter of the claims of the sole and main request was not obvious for the skilled person in view of the prior art and therefore involves an inventive step within the meaning of Article 56 EPC.

7. *Sufficiency of disclosure*

7.1 Article 83 EPC requires that the invention has to be disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

According to the established jurisprudence of the Boards of Appeal that requirement is met if the

invention as defined in the claims can be performed by a skilled person in the whole area claimed without undue burden, using common general knowledge and taking into account further information provided in the patent in suit (see decisions T 409/91, OJ EPO 1994, 653, point 3.5 of the reasons; T 435/91, OJ EPO 1995, 188, point 2.2.1 of the reasons).

7.2 In the present case the patent in suit aims at overcoming the problem of virus transmission and spreading of influenza and common cold. The means to achieve this goal are the use of water soluble aluminium metal ions having at least one hydroxide formation constant with a value of at least 10^{12} in a tissue product comprising a fibrous ply and an antiviral composition comprising the metal ion. The water soluble aluminium ions have the ability to kill the influenza virus and rhinovirus which come into contact with the tissue, for example via virus infected mucus.

7.3 The patent in suit provides in the table on pages 7 and 8 of the patent in suit the cumulative hydroxide formation constant for water soluble metal ions, from which it is apparent that water soluble aluminium ions have at least one of the required hydroxide formation constant. Suitable salts providing the metal ion are mentioned in claim 1 of the main request or in paragraph [0081] of the patent in suit. The patent further contains detailed information on how the tissue paper is conventionally prepared and how the antiviral composition comprising the water soluble metal ion can be applied (see patent in suit paragraphs [0037] - [0076] and [0139] - [0144]). The ability of the

aluminium ions for killing the viruses responsible for influenza and common cold were demonstrated in the examples of the patent in suit. These facts were not contested by the Respondent.

7.4 The Board further notes that no experimental evidence was provided by the Respondent demonstrating that the skilled person would be unable to reproduce the claimed invention. In fact, the Respondent argued insufficiency of disclosure only in connection with one particular embodiment of the invention, namely that disclosed in the dependent claim 5.

7.4.1 Dependent claim 5 refers to the presence of a lotion further comprising an antiviral composition whereby the antiviral composition comprises from about 0.05% to 80% by weight of said lotion and wherein the antiviral composition is a water soluble metal ion. The Respondent argued that it is impossible to produce a lotion composition comprising 80% metal ions, which is the antiviral compound, from the metal salts listed in the patent in suit. For example in a salt like copper sulfate only 40% of the weight can be attributed to the copper ion. A composition of 80% by weight of copper ions can therefore not be produced as the composition would have to comprise more than 100% by weight of the sulfate anion. In other words, even if the "lotion" would consist of 100% antiviral composition and the antiviral composition of a 100% of copper sulfate, the amount of copper ions would not exceed 40%. According to the Respondent the same applies to all the salts mentioned in the patent in suit where the metal ion generally accounts for less than half of the weight of

the metal salts, including the presently claimed aluminium salts.

- 7.4.2 The Board does not dispute the Respondent's calculation. An upper limit of 80% by weight of the metal ion is obviously incorrect when using the claimed aluminium salts. The Board is, however, of the opinion that the person skilled in the art when trying to put the embodiment of claim 5 into practice would readily identify this obvious mistake and know how to correct it. The Board has no doubts that the skilled person is in a position to calculate for a given aluminium salt the maximum amount of aluminium ion, which can be attributed to that particular salt, in the same way as the Respondent did for the copper sulfate. It would also be immediately obvious to him that this value represents the theoretical upper limit, which cannot be surpassed when formulating a lotion. The obvious error in claim 5 is therefore not considered detrimental to the sufficiency of disclosure.

For these reasons and in the absence of any experimental evidence to the contrary, the Board concludes that the requirement of Article 83 EPC is fulfilled over the scope of the claim.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent on the basis of the sole request (claims 1-7) filed during oral proceedings of 14 October 2009, after any necessary amendments of the description.

The Registrar:

The Chairman:

B. Atienza Vivancos

P. Ranguis