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D E C I S I O N
of 30 October 2002

Case Number: T 0073/99 - 3.3.6

Application Number: 92201005.3

Publication Number: 0511695

IPC: D21C 9/10

Language of the proceedings: EN

Title of invention:

Process for bleaching of lignocellulose-containing pulp

Patentee:

Eka Chemicals AB

Opponent:

Kemira Chemicals OY

Headword:

Pulp bleaching/EKA

Relevant legal provisions:

EPC Art. 56, 114(2)

Keyword:

"Late filed document - relevant and admitted"

"Inventive step - yes (after amendment - inventive step
acknowledged by the appealing opponent)

Decisions cited:

-

Catchword:

-



Case Number: T 0073/99 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 30 October 2002

Appellant: Kemira Chemicals OY
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Respondent: Eka Chemicals AB
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Representative: Rigler Johann
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 5 November 1998
rejecting the opposition filed against European
patent No. 0 511 695 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: P. Krasa
Members: G. Dischinger-Höppler
M. B. Tardo-Dino

Summary of Facts and Submissions

I. This appeal is from the decision of the Opposition Division to reject the opposition and to maintain European patent No. 0 511 695 on the basis of 10 claims as granted, the only independent claim reading:

"1. A process for delignification and bleaching of a chemically digested lignocellulose-containing pulp, characterised in that the pulp is bleached at a pH in the range from about 1 to about 6 with a bleaching chemical selected from the group consisting of chlorine dioxide, ozone, peracetic acid and acid peroxides, thereafter the pulp is washed, whereupon a water-soluble chemical containing magnesium is added at a pH in the range from about 1 up to about 7 and in an amount of from about 0.01 up to about 10 kg/ton of dry pulp, calculated as magnesium, and that subsequently the pulp is bleached with hydrogen peroxide at a pH of from about 8 up to about 12."

II. The notice of opposition, based on insufficiency of disclosure (Article 100(b) and 83 EPC), and lack of novelty and inventive step (Article 100(a), 54 and 56 EPC) cited the following documents:

(1): EP-A-0 415 149,

(2): US-A-4 731 161 and

(3): US-A-4 222 819.

III. In its decision, the Opposition Division found the invention sufficiently disclosed in accordance with Article 83 EPC and the subject-matter of the claims as

granted to be novel and to involve an inventive step as against documents (1) to (3). Two documents filed late during the opposition proceedings were not admitted on the grounds that they were not more relevant than those duly filed within the nine-month period for opposition.

IV. During the appeal proceedings, the Appellant (Opponent) filed a further document with its statement of grounds of appeal and finally, with a letter dated 15 July 2002, the following document

(7) G. Gellerstedt et al., Journal of Wood Chemistry and Technology, 2(3), 1982, pages 231 to 250.

V. The Appellant, in its written submissions maintained that the subject-matter then claimed was not based on an inventive step in view of documents (1), (3) and (7) as the most relevant prior art and submitted in essence the following arguments:

- Starting from the bleaching sequence disclosed in document (1) as the closest prior art, it was obvious to add a magnesium compound to the acidic pulp as in document (3) and in particular as in document (7) after a washing step in order to reduce cellulose degradation and improve pulp brightness since it was known that magnesium acted as a cellulose protector and its addition to alkaline solutions would form an insoluble precipitate.
- The same conclusion was obtained in view of the bleaching process of document (7) as the closest prior art when combined with the teaching in document (1) that a pre-treatment with

peroxomonosulfuric acid (an acid peroxide) enhances a subsequent alkaline hydrogen peroxide bleaching stage.

VI. The Respondent (Proprietor), in writing, requested not to admit the late-filed document (7) into the proceedings because *prima facie* it was not highly relevant. Concerning inventive step it was in essence submitted that

- the object achieved with the claimed process consisted in creating an optimum trace metal profile in the pulp prior to alkaline hydrogen peroxide bleaching;

but that the prior art gave no incentive to operate in the claimed bleaching sequence since

- document (1) taught away from applying hydrogen peroxide in a second bleaching stage because the best results were obtained if the second stage was an oxygen stage and any addition of a magnesium compound was done either during the acid pre-bleaching stage or during the alkaline oxygen stage; and
- document (3), relating to a peroxide bleaching process under acidic and alkaline conditions, did not suggest to perform any washing or to add any magnesium compound between the acid and alkaline bleaching as an intermediate step.

VII. With a letter dated 28 October 2002, the Respondent filed two sets of amended claims in a first and second auxiliary request. Claim 1 of the first auxiliary

request differs from that of the main request only in that the feature "for a period of time from about 1 up to about 180 min," has been inserted after the feature "whereupon a water-soluble chemical containing magnesium is added at a pH on the range from about 1 up to about 7". In Claim 1 of the second auxiliary request the introduced feature is further restricted to "for a period of time from about 20 up to about 180 min,". In both auxiliary requests, the wording of dependent Claim 10 remained unchanged as in the granted version and contained the feature "... the water-soluble chemical magnesium is added at a temperature of from about 10 up to 95°C for about 1 up to about 180 min ...".

VIII. Oral proceedings before the Board of Appeal were held on 30 October 2002. During these proceedings, the Board, after a discussion of the case as it stood and in particular with respect to the relevance of the late-filed document (7), announced its intention to admit that document into the proceedings, to remit the case to the first instance for further prosecution and to apportion costs in the Respondent's favour. Thereupon, the Appellant requested to maintain the patent on the basis of the claims of the second auxiliary request on condition that the wording of dependent Claim 10 was brought into conformity with that of amended Claim 1. The Respondent in its turn withdrew all its previous requests and filed in a single new request amended claims corresponding to those of the second auxiliary request with the exception that Claim 10 was adapted to the wording of Claim 1.

IX. The Appellant requests

- (1) that the decision under appeal be set aside,
- (2) that the document (7) be admitted into the proceedings and
- (3) that the patent be maintained in an amended form according to the Claims 1 to 10 of the request filed by the Respondent during oral proceedings.

The Respondent requests

- (1) that the decision under appeal be set aside and
- (2) that the patent be maintained in an amended form according to the Claims 1 to 10 of the request filed during oral proceedings.

Reasons for the Decision

1. *Amendments*

By the amendments made to the claims of the present single request, for which the basis can be found in the application as originally filed, the scope of protection has been limited. The requirements of Articles 123(2) and (3) EPC are therefore met. This was not contested by the Appellant. On the contrary, by requesting maintenance of the patent on the basis of the claims as amended, the Appellant explicitly abstained from submitting any such objections.

2. *Late filed document (7)*

2.1 About three and a half years after commencing the

appeal proceedings, and more than five years after expiry of the opposition period, and about three and a half months before the date for oral proceedings before the Board, the Appellant relied for the first time on document (7) which was published in 1982, more than 10 years before the application of the patent in suit was filed. This document is, as the Appellant put it, "an article of the prominent Professor Gellerstedt". The Board in agreement with the Respondent concludes, therefore, that document (7) must be supposed to have been known to those skilled in the art long before the present opposition was filed.

The only reason for the late filing of document (7) given by the Appellant in its letter dated 15 July 2002 and during the oral proceedings is that "the relevance of this document has only recently come to the attention of the Appellant". Concerning this relevance, it is stated that document (7) showed that feature of the claimed process which was considered essential by the Respondent, namely that after an acidic pre-treatment and a washing step the magnesium salt was added at an acidic pH.

- 2.2 The Boards of Appeal at the EPO often exercise their discretion under Article 114(2) EPC to admit late-filed evidence into the proceedings provided, inter alia, that it is prima facie more relevant with regard to the claimed invention than the citations already on file, and that it might change the outcome of the decision to be taken by the Board.

Although the disclosure of document (7) is no bar to patentability with respect to the subject-matter of the amended claims according to the present single request

(see below), the necessity to admit it into the proceedings due to its particular relevance is, in the present case, evident if only from the fact that, upon discussion of that matter, the Respondent during the oral proceedings filed these claims and withdrew all its previous requests.

- 2.3 In particular, document (7) - like the patent in suit (see page 2, lines 25 to 33) - is concerned with the general problem of how decomposition of hydrogen peroxide under alkaline bleaching conditions can be prevented by an efficient removal of transition metal ions from the pulp prior to the bleaching (page 231, last paragraph to page 232, first paragraph and page 234, lines 11 to 14). It is mentioned that removal of transition metal ions with chelating agents and hydrogen peroxide stabilisation with magnesium salts was known in the art (page 232, lines 1 to 12). It was found that bleaching with hydrogen peroxide was particularly effective if the pulp was pre-treated with a combination of sodium bisulphite and DTPA (a chelating agent) at a pH of about 4.5 to 5 (page 234, second full paragraph to page 236, third full paragraph, in combination with Table 1 and Figures 1 to 4) prior to the peroxide bleaching at a temperature of 90°C (page 236, lines 17 to 20 and page 238, lines 10 to 13 in combination with Figures 3 and 6).

The example given in the experimental section on pages 247 to 248 discloses such a pretreatment of the pulp with sodium bisulphite and DTPA prior to the alkaline hydrogen peroxide bleaching wherein, between the pretreatment and peroxide bleaching, the pulp is washed, then placed in a bottle and preheated to the desired temperature together with water and magnesium

salt (page 248, lines 3 to 6 of the text in combination with page 247, last paragraph). Due to the acid pretreatment, the pH must still be acidic (up to pH 7) after the washing and during the subsequent addition of the magnesium salt. Further, given the above preferred temperature of 90°C during the peroxide bleaching, some time is required for heating the pulp in the presence of the magnesium salt before hydrogen peroxide and sodium hydroxide are added for the bleaching stage.

Thus, document (7) discloses the bleaching of pulp with hydrogen peroxide wherein the pulp is subjected to the following sequence of steps: an acid pre-treatment, a washing, the addition of magnesium compound at acidic conditions and - after some time required for heating the pulp - an alkaline peroxide bleaching.

- 2.4 The particular importance of that sequence concerns the point and pH condition at which the magnesium compound is to be added. Since none of the documents on file discloses those features, the Board concludes that in this respect document (7) is *prima facie* technically more relevant than the documents already on file and, therefore, to be taken into consideration here (Article 114(2) EPC).

3. *Patentability*

By the amendment made to Claims 1 and 10 of the present single request, the process has been restricted to a period of time of 20 to 180 minutes for the addition of the magnesium compound. The amendment does not change the situation as far as sufficiency of disclosure and novelty are concerned. Nor did the Appellant ever maintain these objections during the appeal

proceedings. No further comment on this matter is therefore necessary.

The only objection, the Appellant raised against the patent on appeal was lack of inventive step (Article 56 EPC). However, during oral proceedings, the Appellant explicitly abstained from maintaining this objection in view of the amended claims of the now pending single request, and indicated that none of the cited prior art suggested the now claimed addition of magnesium compound in an extra step for at least 20 minutes. Nor does the Board see any indications in the prior art documents encouraging those skilled in the art to include in a peroxide bleaching sequence such an extra step for adding a magnesium compound.

4. Since the opposition has been rejected by the Opposition Division in a reasoned decision, thereby maintaining the patent as granted and the appealing Opponent has not provided any argument against the maintenance of the patent in the present restricted form, and since further the Board has no reason to assume that the subject-matter as now claimed was obvious in the light of the prior art on file, the Board comes to the conclusion that the process of Claim 1 is based on an inventive step as required by Article 56 EPC.

The same applies to the dependent Claims 2 to 10 which refer to preferred embodiments of Claim 1.

Order

For these reasons it is decided:

1. The decision under appeal is set aside.
2. The document (7) is admitted into the proceedings.
3. The case is remitted to the first instance with the order to maintain the patent on the basis of Claims 1 to 10 of the request filed during oral proceedings and a description to be adapted thereto.

The Registrar:

The Chairman:

G. Rauh

P. Krasa