

Internal distribution code:

- (A) [] Publication in OJ
(B) [] To Chairmen and Members
(C) [X] To Chairmen

D E C I S I O N
of 13 January 2000

Case Number: T 0297/96 - 3.3.6

Application Number: 90850200.8

Publication Number: 0402335

IPC: D21C 9/10

Language of the proceedings: EN

Title of invention:

Process for bleaching lignocellulose-containing pulps

Patentee:

Eka Chemicals AB

Opponent:

Degussa-Hüls AG Patente und Marken
Kemira Chemicals OY

Headword:

Pulp bleaching/EKA

Relevant legal provisions:

EPC Art. 56, 114(2)

Keyword:

"Late submission by Proprietor: no"
"Inventive step: yes (after amendment)"

Decisions cited:

-

Catchword:

-



Case Number: T 0297/96 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 13 January 2000

Appellant: Eka Chemicals AB
(Proprietor of the patent) 445 80 Bohus (SE)

Representatives: Schöld, Zaid
Eka Chemicals AB
Patent Department
Box 11556
100 61 Stockholm (SE)

Tauchner, Paul
VOSSIUS & PARTNER
Postfach 86 07 67
D-81634 München (DE)

Respondent I: Degussa-Hüls AG
(Opponent 01) Patente und Marken
Postfach 1345
D-63403 Hanau (DE)

Respondent II: Kemira Chemicals OY
(Opponent 02) Porkkalankatu 3
PO Box 330
FIN-100101 Helsinki (FI)

Representative: Sexton, Jane Helen
J.A. KEMP & CO.
14 South Square
Gray's Inn
London WC1R 5LX (GB)

Decision under appeal: Decision of the Opposition Division of the

European Patent Office posted 8 February 1996
revoking European patent No. 0 402 335 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: P. Krasa
Members: G. Dischinger-Höppler
J. H. P. Willems

Summary of Facts and Submissions

- I. The appeal is from a decision of the Opposition Division to revoke European patent No. 0 402 335, relating to a process for bleaching lignocellulose-containing pulp.
- II. Based on a number of citations, two oppositions were filed against the patent in its entirety on the grounds of Articles 54 and 56 EPC (Article 100(a) EPC). The Appellant (Proprietor) defended the patent in suit, inter alia, by filing test results represented in Figures 2 to 4 which were annexed to his letter dated 15 March 1995 and intended to show a particular temperature-dependent effect for the claimed process.
- III. In its decision, which was based on amended claims according to a main and three auxiliary requests, the Opposition Division found that the claimed subject-matter was not inventive in view of document
- (1) JP-A-57-21591 (& English translation filed by Respondent II (Opponent II)).
- IV. The Appellant filed a statement of grounds of appeal and with a further letter dated 16 December 1999 additional statements together with two sets of amended claims and amended descriptions as a new main and first auxiliary request. During the oral proceedings held before the Appeal Board on 13 January 2000, he filed two further sets of amended claims and descriptions according to a second and third auxiliary request. All requests comprise 11 claims. The only independent claim of the main request reads as follows:

"1. A process for bleaching chemically delignified lignocellulose pulp, adapted to render more efficient a hydrogen peroxide treatment step, by treating the pulp, before said hydrogen peroxide step, with a complexing agent in the absence of a peroxide-containing substance, characterized in that the pulp is treated with a complexing agent, there being no sulphite present, at a pH in the range from 3.1 up to 9.0 and at a temperature in the range from 40°C up to 100°C, resulting in a pulp having a selectively changed metal content, whereupon, in the subsequent step, after an optional washing step the treatment with hydrogen peroxide is carried out at a pH in the range from 8 up to 13."

The only independent claim of the first auxiliary request differs therefrom only in that "carried out at" is replaced by "carried out **by charging hydrogen peroxide as the only peroxide containing substance** at".

The only independent claim of the second auxiliary request differs from that of the main request in that it is restricted to chemically delignified lignocellulose pulp **prepared according to the sulphate or soda process**. The same amendment has been made in the only independent claim of the third auxiliary request with respect to that of the second auxiliary request.

V. During the opposition and appeal proceedings several documents and expert statements were filed in respect of the particular temperature conditions present in the claimed process, including a statement by Mr. Laxén dated 11 January 2000 (hereinafter referred to as

document 16)) and a post-published document representing a talk held by Mr. Fastén at a conference relating to pulp bleaching which took place in March 1993 in South Carolina (hereinafter referred to as document 17)), both filed by Respondent II (Opponent II) during the oral proceedings before the Appeal Board.

VI. Apart from documents (1), (16) and (17), only the following further documents were referred to by the parties during these proceedings:

- (2) D. Lachenal et al., "Optimization of bleaching sequences using peroxide as first stage", Tappi proceedings, 1982 International Pulp Bleaching Conference;
- (3) G. Gellerstedt et al., Journal of Wood Chemistry and Technology, 2(3), pages 231 to 250 (1982); and
- (6) EP-A-0 285 530.

VII. The Appellant's arguments submitted in writing and orally can be summarized as follows:

- The contents of documents (16) and (17) were irrelevant and not to be considered by the Board.
- The problem underlying the patent in suit was to render the hydrogen peroxide bleaching stage (P stage) more efficient by selectively changing the metal profile in the pulp, in particular of the harmful manganese (Mn) content versus the content of beneficial magnesium (Mg). To this end, it was,

inter alia, essential that a complexing stage (Q stage) was conducted at a temperature in the range of 40°C up to 100 °C.

- Either document (1) or (3) could be chosen as the closest prior art, both leading to the same conclusion that the claimed process was inventive.
- Document (1) did not contain any enabling disclosure for any definite temperature at this stage. Nor was such a temperature obvious from any other citation.
- The process of document (1) required as an essential feature a treatment with peracetic acid (PA stage) which was more expensive but also a more powerful bleaching agent than hydrogen peroxide. Therefore, it would not have been obvious to simply omit this stage and expect that with hydrogen peroxide alone good results could still be obtained.
- Document (3) taught that it was essential to add sodium bisulfite during the Q stage for removing all metals present in kraft pulps. Any combination of documents (1) and (3) would, therefore, result in the conclusion that sodium bisulfite addition at the Q stage was mandatory if peracetic acid should be avoided. In comparison, the patent in suit unexpectedly provided a process with improved bleaching efficiency and in the absence of sulfite.
- Any prior art referring to mechanical pulps was

not relevant for chemical pulp technology. This was confirmed by document (2). Therefore, document (6) was not relevant in respect of the claimed subject-matter.

VIII. The Respondents (Opponents) essentially submitted that

- the Appellant's submission dated 16 December 1999 was belated and should not be considered by the Board;
- the gist of the patent in suit was to render as much as possible from the hydrogen peroxide used in a pulp bleaching process usable for the bleaching process;
- the subject-matter claimed in the patent in suit differed from the teaching of document (1) as the closest prior art in that, firstly, only hydrogen peroxide was used instead of additional peracetic acid and, secondly, document (1) was silent on the temperature at the Q stage;
- it was known from both the patent in suit and document (1) that peracetic acid and hydrogen peroxide were alternative agents for peroxide bleaching; it was also known from document (3) and (6) that improvements were obtainable with the claimed high temperatures at the Q stage; and application of high temperatures at the Q stage was obvious if only for economic reasons;
- the teaching of document (3) was restricted to kraft pulps and the problem of insoluble metal

ions contained therein, which problem did not, however, exist in other chemical pulps;

- the starting material's content in Mn according to the patent in suit was considerably lower than that according to document (3); as deterioration of hydrogen peroxide by Mn ions was dependent on such contents, the problems addressed in document (3) and necessitating there the sulfite addition, should not arise with the pulps according to the patent in suit;
- a person skilled in the art would be familiar with all kinds of pulps, including chemical pulps, mechanical pulps and chemi-thermo-mechanical pulps (CTMP); he would, therefore, simply try the process known from document (6) for CTMP in a chemical pulp and thereby arrive at the claimed subject-matter.

IX. The Appellant requested that the decision under appeal be set aside and that the patent be maintained in amended form either according to the main request submitted 16 December 1999 or first auxiliary request of the same date, alternatively according to the second or third auxiliary request submitted during the oral proceedings.

The Respondents requested that the appeal be dismissed.

Reasons for the Decision

1. *Late submitted letter of the Appellant*

Respondent I (Opponent I) objected that the Appellant's second letter was belated since it was filed later than one month before the date for oral proceedings. To be in line with the 'Guidelines for Examination in the European Patent Office', it should have been filed on 13 December 1999 at the latest (see Guidelines, Part E, chapter III, point 5).

In contrast and as referred to by the Appellant, according to the latest version of the 'Guidance for parties to appeal proceedings and their representatives' (see OJ 1996, 353, Section 3.3) submissions may be made within a four week term before the oral proceedings. The Appellant correctly met this time limit by submitting his second letter on Thursday, 16 December 1999, which was exactly four weeks before the date for oral proceedings on Thursday, 13 January 2000.

More important in the present case is, however, that the submission in question, despite two included expert statements, does not in the Board's opinion contain any new facts or evidence which might be disregarded under Article 114(2) EPC.

Moreover, the set of claims submitted with this letter as a new main request corresponds essentially to the claims on file before the Opposition Division as a second auxiliary request, with the only exception of a minor amendment with respect to the lower limit of the

pH value in the P stage. Considering that, consequently, the Respondents could not be taken by surprise by any arguments put forward in respect of this request, the Board accepts the Appellant's second submission.

2. *Amendments (Article 123(2) (3) EPC and Article 84 EPC)*

The amendments made to Claim 1 of the patent in suit in accordance with the main request find support in the claims in combination with the description of the application as originally filed (see Claim 1 in combination with page 4, lines 23 to 34, page 5, lines 4 to 10, 23 and 31 to 34, page 6, lines 5 to 8 and page 8, lines 22 to 27), except for the amendment concerning the treatment with a complexing agent "in the absence of a peroxide-containing substance". This latter amendment is, however, supported by the examples set out in the patent in suit which indicate the treatment conditions in both the Q stage and the P stage. The amendments further bring about a restriction of the scope of the claims. They comply, therefore, with the requirements of Article 123(2) and (3) EPC.

The same applies to the amendments in Claim 1 of the first auxiliary request (see application as originally filed, page 5, lines 28 to 30), to the amendments in Claim 1 of the second and third auxiliary request (page 1, lines 10 to 12 of the application as originally filed), as well as to the amendments made to the dependent claims (see application as originally filed, Claims 4 to 8 and 11, in combination with page 5, lines 28 to 30, page 5, line 38 to page 6, line 4, and page 6, line 17).

Respondent I objected that, in contradiction to the description according to which the Q stage had to be carried out under neutral conditions (page 3, line 39), Claim 1 (any request) permits it to be carried out within a pH range of from 3.1 up to 9.0. However, such contradiction, if any, which can only be addressed under Article 84 EPC, was already present in the patent as granted and is not due to any amendments brought about at the opposition or appeal proceedings. According to Article 100 EPC, any such objection under Article 84 cannot, therefore, be raised at the present late stage of proceedings.

Moreover, the patent in suit also states that the Q stage be carried out at a pH within the claimed range (page 3, lines 44 to 49). In the Board's opinion, this latter statement amounts to a definition of what has to be understood in the patent in suit by the term "neutral conditions".

The amendments do not, therefore, introduce any deficiency in clarity and are in compliance with Article 84 EPC.

3. *Novelty (all requests)*

None of the cited prior art discloses the combination of features as claimed in accordance with all requests, comprising the application of a two step treatment to chemically delignified lignocellulose pulp, wherein the first step is a Q stage which is carried out in the absence of both sulfite and a peroxide-containing substance under the particular pH and temperature conditions claimed, and the second step is a P stage

under alkaline conditions (pH 8 to 13). This not being contested, no detailed reasoning is required here.

For these reasons, the Board concludes that the subject-matter of Claim 1 is novel.

4. *Inventive step*

The patent in suit relates to a process for bleaching lignocellulose-containing pulp, wherein a P stage, carried out under alkaline conditions, is rendered more efficient by treating the pulp in advance in a Q stage with a complexing agent (page 2, lines 3 to 5) in order to reduce the amount of or totally avoid the normally used chlorine-containing bleaching agents which are ecologically harmful (page 2, lines 15 to 27). Thereby, lignocellulose-containing pulps generally refer to chemical pulps from softwood and/or hardwood, delignified according to the sulfite, sulfate, soda or organosolv process (page 2, lines 8 to 9).

4.1 Technical background

According to the patent in suit, it was known in the art that trace metals are detrimental to the decomposition of hydrogen peroxide and that these metals can be eliminated, preferably completely, via the formation of complexes with a complexing agent (page 2, lines 47 to 51 and page 4, lines 52 to 54).

In comparison, according to the invention a more favourable effect on the subsequent hydrogen peroxide will occur if the trace metal profile is selectively changed so that those metals which are most detrimental

to the decomposition of hydrogen peroxide, such as Mn, are considerably reduced, while other metals, e.g. Mg, which have a favourable effect in the process are essentially retained (page 4, line 54 to page 5, line 5). Therefore, a process of the above kind is aimed at, by which the desired selectively changed metal content can be obtained.

4.2 Prior art

Document (1) (all references will refer to the English translation) relates to a method of improving the bleaching effect in peracetic acid bleaching (PA stage) of wood pulp by adding alkali after the peracetic acid bleaching, thereby activating any hydrogen peroxide remaining from the coexisting amount thereof in the peracetic acid used, for a subsequent hydrogen peroxide bleaching (page 2, lines 13 to 35, page 3, lines 35 to 38). The peracetic acid bleaching is proposed as an alternative to the conventional harmful chlorine bleaching (page 3, lines 19 to 27). The peracetic acid is said to be expensive and, like hydrogen peroxide, decomposed by heavy metal catalysts (page 3, lines 27 to 29 and page 3, line 46 to page 4, line 1). In order to limit such decomposition, the pulp is treated, under about neutral conditions, with a chelating agent, e.g. diethylenetriaminepentaacetate (DTPA), either during the PA stage or in advance of it (page 3, line 39 to page 4, line 11, page 4, lines 20 to 33 and Examples 1 and 2). The process can be applied to any kind of pulp, including chemical, semi-chemical and mechanical pulp (page 4, lines 34 to 35). Document (1) is silent on any particular temperature to be applied during the Q stage.

Document (2) pertains to the bleaching and delignifying action of hydrogen peroxide on kraft pulp under alkaline conditions when it is pretreated with hot acid (page 145, abstract). It is indicated that Mg salts are beneficial in the process (page 148, right-hand column, last paragraph) whereas Mn ions are the most harmful catalysts (page 146, left-hand column, first

paragraph). It is shown that by an acid washing of the pulp the metal profile can be selectively changed in that Mn ions are almost completely removed whilst Mg ions are retained to a considerable extent (page 145, Table I), thereby increasing the delignification effect of a subsequent alkaline P stage (page 146, Table II). Document (2) does not, however, mention any pretreatment with a complexing agent (Q stage).

Document (3) also concerns alkaline hydrogen peroxide bleaching of kraft pulps and mentions the beneficial effect of Mg ions as well as the detrimental effect on the decomposition of the hydrogen peroxide of metal ions like those of Mn (page 231, abstract and page 232, lines 3 and 21 to 23). It is stated that "analogously to mechanical pulp bleaching, an efficient removal of transition metal ions from chemical pulps prior to bleaching is an absolute prerequisite for an efficient utilization of hydrogen peroxide" (page 233, lines 8 to 11). To this end, the pulp is pretreated with DTPA in a Q stage, however, without indicating any temperature conditions (page 233, lines 25 to 29). Nevertheless, it has been found that in kraft pulps, unlike in mechanical pulps, a considerable amount of transition metal ions able to catalyze decomposition of hydrogen peroxide still remains in the pulp (page 234, lines 4 to 7 and page 246, conclusions). It is assumed that this effect is due to the particular conditions in the kraft cook which convert transition metals present in the original wood into insoluble sulfides and hydroxides and that these are strongly retained in the fibers and not accessible to the complexing agent (page 234, lines 21 to 24). Thus, it has been found in document (3) that it was necessary to optimize the Q

stage with respect to pH and temperature and to carry it out in the presence of sulfite (page 234, last paragraph). Best results are shown for a **mixture of** sodium bisulfite and DTPA at high temperature (90°C) and a pH of around 5 (page 235, Table 1 and Figure 1, page 237, Figure 3, page 240, Figure 7).

The process for bleaching pulp according to document (6) is restricted to the bleaching of mechanical pulps and CMTF (page 2, lines 1 to 2). It essentially consists of a Q stage using DTPA as the complexing agent, carried out in the absence of sulfite as well as of a hydrogen peroxide-containing substance at a pH of from 6 to 8 and at a temperature of from 50°C to 95 °C, followed by a washing step and then by a P stage under alkaline conditions (Claims 1, 3, 4 and 8, page 3, line 38 to page 4, line 1 and Examples).

Documents (16) and (17) are not prior art within the meaning of Article 54(2) EPC.

4.3 Closest prior art

In the Respondents' view, document (1) disclosed the closest prior art, whereas the Appellant argued that documents (1) and (3) were equally suitable as a starting point for assessing inventive step.

The Board can accept this latter view, since only documents (1) and (3) refer to hydrogen peroxide bleaching of chemical pulps after having been pretreated in a Q stage, thereby fulfilling the requirements laid down in the established case law of the Boards of appeal of the European Patent Office,

according to which the closest prior art must be directed to the same or a closely related purpose or effect as the invention.

4.4 Technical problem and its solution

According to the Appellant, the technical problem consists in selectively changing the metal profile in the pulp so that the hydrogen peroxide bleaching stage was rendered more efficient.

4.4.1 Considering that the process taught in document (3) is said to be suitable for removing most of the metal ions from the pulp (page 246, last three lines) which may be interpreted to include Mn as well as Mg ions and given Examples 1 and 5 of the patent in suit, it is accepted that this problem exists for the kraft pulps considered in document (3). In fact, Example 5 shows a selective removal of Mn as compared with Mg. In view of the process of document (3), the solution to the above problem simply consist in the omission of sulfite in the Q stage. Example 1 of the patent in suit which represents an acceptable comparison with what is taught in document (3), shows that due to this omission of sulfite the claimed process is indeed considerably more effective. This is illustrated by the smaller hydrogen peroxide consumption at higher brightness and increased viscosity of the pulp, the latter indicating increased strength and decreased cellulose degradation (see patent in suit, page 5, lines 12 to 15).

In this respect, Respondent I argued that the comparison was defective since the Examples of the patent in suit used pulps with a substantially lower

content in Mn (Example V: 80 ppm) than document (3) (Table 1: 127 ppm). This argument is, however, not convincing as far as kraft pulps (which is synonymous for pulps delignified by the strongly alkaline "sulphate" or "soda" process) are concerned because, in accordance with the teaching of document (3), the presence of insoluble and, hence, detrimental Mn ions should be expected in any case, irrespective of the precise overall amount contained in the original wood. Moreover, the above assumption that the effects demonstrated in the patent in suit were linked to the lower Mn contents, which was contested by the Appellant, were not supported by experimental evidence.

4.4.2 The claims according to the main and first auxiliary request, however, are directed to the treatment of chemical pulps in general and therefore also cover pulps obtained according to the "sulfite" process or the "organosolv" process. In contrast to the kraft pulps which are obtained under strong alkaline conditions, delignification in sulfite pulps is achieved with sulfite agents, inter alia sodium bisulfite, under acid conditions. In such pulps no insolubilized metal ions can be expected. This was not contested by the Appellant. Nevertheless, he contended that a skilled person would treat sulfite pulps in the same way as kraft pulps. The Board, however, is convinced that a person skilled in the art of papermaking also has to be familiar with the general technical field of papermaking chemistry and, therefore, knows about the differences in the basic chemical reactions taking place in sulfite and sulfate delignification processes. Therefore, with respect to chemical pulps other than kraft pulps, the objective technical problem in view of document (3) must be reformulated into the less ambitious task of providing a further process for bleaching chemical pulp with hydrogen peroxide. Its solution consists then not only in the omission of sulfite but also the application of the process to pulp obtained by the sulfite or organosolv process. It is evident that, in this way, the above stated problem has, in fact, been solved.

4.4.3 Concerning document (1), there are no comparative data on file. The Board concludes, therefore, that the objective technical problem in view of document (1) simply consists in providing a further process for bleaching pulp with hydrogen peroxide, however, without

the need of expensive peracetic acid, but which still gives reasonable results. In this case, the solution consists in conducting the Q stage in the absence of any peroxide-containing substance and without any peracetic acid between Q and P stage at a temperature of from 40°C to 100°C. The Board is satisfied by the test result illustrated in Figures 2 and 3 filed by the Appellant with a letter dated 15 March 1995, that within the claimed temperature range in the Q stage, this problem is solved too: Figure 2 shows the advantageous reduction of Mn and retainment of Mg and Figure 3 shows improved brightness, delignification and viscosity of the pulp at lowered hydrogen peroxide consumption.

4.5 Inventive step (main request and first auxiliary request)

As indicated above, the claims according to the main and first auxiliary request cover also the application of the process to a pulp obtained by the sulfite process. Starting from document (3) as the closest prior art, the skilled person looking for an alternative process for bleaching with hydrogen peroxide chemical pulp in general would, in the Board's opinion, realize from the teaching of document (3) that the problem with insoluble Mn ions described therein only exists in kraft pulps. He would not expect it to exist in sulfite pulps. Hence, he would recognize that the addition of sulfite for solubilising insoluble metal salts is unnecessary in the case of sulfite pulps. Moreover, he would be led by document (3) also to consider mechanical pulps, because of the analogy taught therein with respect to the requirement of

removal of transition metal ions (document (3), page 233, lines 8 to 11 and page 246, conclusions) and because any warning not to apply knowledge acquired with mechanical pulps merely concerns kraft pulp technology (document (2), page 145, right-hand column, first paragraph). He would, therefore, also consider document (6), in particular as far as sulfite treated CMTF is concerned (Examples 12 to 14) and try, with a reasonable expectation of success, the process disclosed therein for sulfite pulps, thereby arriving in an obvious manner at the claimed subject-matter.

The same result is obtained by starting from document (1) as the closest prior art since the skilled person looking for a process suitable for bleaching pulp as an alternative for chlorine bleaching, but with agents less expensive than peracetic acid, would conclude from document (3) that, except for kraft pulps, hydrogen peroxide alone can be sufficient as a bleaching agent under certain circumstances. He would even more be led also to consider document (6), since document (1) does not strictly differentiate between chemical and mechanical pulps, but instead emphasizes that the process can be applied to any pulps, including chemical, mechanical and semi-chemical pulps (page 4, lines 34 to 35).

For these reasons, the Board concludes that a skilled person would apply the process features disclosed in document (6) to the process known from citation (1) for sulfite pulps and arrive in this manner at the solution claimed in Claim 1 of the Appellant's main request. Therefore, the subject-matter of Claim 1 of the main request does not involve an inventive step.

This finding also applies to Claim 1 of the first auxiliary request which differs from the main request merely by a feature introduced to clarify unequivocally that during the P stage no peracetic acid or other peroxide-containing substance except for hydrogen peroxide is present.

4.6 Inventive step (auxiliary request II)

In contrast to the claims of the above requests, the process of Claim 1 according to the second auxiliary request is restricted to its application in kraft pulps.

Starting from document (3) as the closest prior art, the skilled person is certainly not led to omit sulfite in the Q stage with a view to improving the hydrogen bleaching efficiency, since he learns from said document that the presence of sulfite is essential to overcome the problem of insoluble metal ions present in the particular case of kraft pulps.

Respondent II objected that no difference existed between the addition of sulfite as in document (3) and the acidification with sulfuric acid in accordance with the patent in suit (page 4, lines 21). This is, however, falsified by the clearly superior results shown in Example 1 of the patent in suit with no sulfite present.

Likewise, starting from document (1), nothing would suggest simply omitting peracetic acid and still expect reasonable results, because peracetic acid is the central bleaching agent used in document (1), hydrogen

peroxide merely being coexistent to a minor amount (Tables 1 and 3).

The Respondents contended that the skilled person would consider hydrogen peroxide and peracetic acid as equivalent peroxide-containing bleaching agents. The Appellant contested the existence of such a common general knowledge and maintained that peracetic acid was the more powerful agent and, therefore, not equivalent to hydrogen peroxide. Since the Respondents did not provide any evidence proving their submission, the Board must treat it as a mere allegation.

Considering the emphasis laid on the use of peracetic acid on the one hand in document (1) and on sulfite on the other hand in document (3), any combination thereof would lead, in the Board's opinion, to a replacement of one agent by the other. In other words, a skilled person seeking to avoid the expensive (document (1), page 3, lines 27 to 29) peracetic acid for bleaching kraft pulps would be prompted by the teaching of document (3) to add sulfite during the Q stage. If, on the other hand, the skilled person wanted to render the hydrogen peroxide bleaching stage for a kraft pulp more efficient, however, without nonselective removal of the metal ions, he would learn from document (1) that peracetic acid was an efficient bleaching agent. Document (1) is silent on any selectivity criteria during the removal of the transition metal ions. If anything, a person skilled in the art would, therefore, simply try the peracetic acid suggested in document (1) in exchange for the sulfite in the process of document (3).

The remaining prior art considered by the parties during the oral proceedings, contains no information hinting at the claimed solution of the existing problem.

Document (2) does not even mention the possibility of using a complexing agent but, instead, suggests a pure acid pretreatment.

Document (6) would not be considered at all because of the warning contained in document (3) which indicates that pretreatment with a Q stage alone would be sufficient for mechanical pulps but not for kraft pulps. Moreover, this warning finds some confirmation in document (2) suggesting that no conclusions for appropriate conditions for kraft pulps can be drawn from mechanical pulp bleaching.

The Board is satisfied that the other documents on file do not provide any incentive for the claimed solution either. Since during the oral proceedings before the Board, the Respondents did not rely on any of these documents, there is no need to discuss these other documents.

Since it is found that the claimed subject-matter is not obvious merely for the reasons set out above, it does not matter what temperature in the Q stage of document (1) would have been used by those skilled in the art. Any documents, arguments and expert statements, including documents (16) and (17) are, therefore, irrelevant to the present case. It is therefore not necessary to answer the question of whether or not the late filed documents (16) and (17)

should be disregarded.

5. In conclusion, the Board is satisfied that none of the cited prior art documents, either individually or in combination renders obvious the solution of the existing problem in accordance with the second auxiliary request, and concludes, that the subject-matter of Claim 1 of this request involves an inventive step within the meaning of Article 52(1) and 56 EPC.

Patentability of the dependent Claims 2 to 11 is derived from that of the independent Claim 1.

6. Since the above findings correspond to the grant of the Appellant's second auxiliary request, the third auxiliary request need not be considered.

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 in amended form with Claims 1 to 11 and description pages 2 to 4, 10 and 11 according to the second auxiliary request and pages 5 to 9 as granted.

The Registrar:

The Chairman:

G. Rauh

P. Krasa