

Internal distribution code:

- (A) [] Publication in OJ
(B) [] To Chairmen and Members
(C) [X] To Chairmen
(D) [] No distribution

**Datasheet for the decision
of 26 May 2009**

Case Number: T 0983/06 - 3.3.06

Application Number: 98905092.7

Publication Number: 0960236

IPC: D21H 17/67

Language of the proceedings: EN

Title of invention:

Lumen loading of mineral filler into cellulose fibers for
papermaking

Patentee:

MINERALS TECHNOLOGIES, INC.

Opponent:

OMYA AG

Headword:

Lumen loading/MINERALS TECHNOLOGIES

Relevant legal provisions:

-

Relevant legal provisions (EPC 1973):

EPC Art. 56

Keyword:

"Inventive step - no"

Decisions cited:

-

Catchword:

-



Case Number: T 0983/06 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 26 May 2009

Appellant: OMYA AG
(Opponent) Baslerstr. 42
CH-4665 Oftringen (CH)

Representative: Richebourg, Michel François
Cabinet Michel Richebourg
"Le Clos de Golf"
69, rue Saint-Simon
F-42000 Saint Etienne (FR)

Respondent: MINERALS TECHNOLOGIES INC.
(Patent Proprietor) 405 Lexington Avenue
New York
New York 10174-1901 (US)

Representative: Bawden, Peter Charles
Bawden & Associates
4 The Gatehouse
2 High Street
Harpenden
Hertfordshire AL5 2TH (GB)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 21 April 2006
rejecting the opposition filed against European
patent No. 0960236 pursuant to Article 102(2)
EPC 1973.

Composition of the Board:

Chairman: P.-P. Bracke
Members: G. Dischinger-Höppler
U. Tronser

Summary of Facts and Submissions

I. European patent No. 0 960 236 was granted on the basis of a set of 17 claims containing two independent Claims 1 and 12. For the purpose of this decision it is sufficient to indicate the wording of independent Claim 12 which reads:

"12. The use of an amphoteric, anionic or cationic starch flocculent in a papermaking furnish of never dried wood pulp fibre and mineral filler to fix the mineral filler inside the lumens of the wood pulp."

II. A notice of opposition had been filed against the granted patent, wherein the Opponent sought revocation of the patent on the grounds of, inter alia, Article 100(a) EPC for lack of inventive step (Article 56 EPC). The opposition was based, amongst others, on documents

D7 Kapoor et al., "Studies on Increasing Filler Loading of Paper to Save Cellulosic Raw Material", IPPTA, Vol.-8, No.-3, September 1996, pages 93 to 99; and

D11 Middleton et al., "Lumen Loading of Bleached Pulps", Journal of Pulp and Paper Science, Vol. 15, No. 8, 1989, pages J 229 to J 235.

III. The Opposition Division rejected the opposition for the reason that the patent and the invention claimed fulfilled the requirements of the EPC. Concerning inventive step, it was held that the claimed subject-matter was not obvious in the light of document D11 as

the closest prior art since none of the other cited prior art documents contained any clear pointer towards the using of ionic starch as an alternative flocculant for the commercial polyacrylamide (PAM) of low cationic charge disclosed in document D11.

- IV. This decision was appealed by the Opponent, now Appellant.

- V. Upon requests made by both parties, oral proceedings before the Board of Appeal were held on 26 May 2009 in the absence of the Patent Proprietor, now Respondent, as announced by letter dated 30 April 2009.

- VI. The Appellant, orally and in writing, submitted objections under Article 100a) and c) EPC. Concerning inventive step, the Appellant considered document D11 as a suitable starting point whose teaching differed from the claimed subject-matter only in that ionic starch instead of PAM was used for fixing the mineral filler within the lumens. The effect achieved in view of the process disclosed in document D11 consisted in a reduction of the costs of the process. However, it was known from document D7 that retention of filler was improved by both, hydrocol and cationic starch. Since it was generally known in the art that hydrocol consisted essentially of PAM and that starch products were considerably cheaper than PAM, it was obvious for someone skilled in the art seeking to make the process disclosed in document D11 less expensive, to replace the PAM by cationic starch. Therefore, the subject-matter of Claims 1 and 12 was not inventive.

- VII. The Respondent, in writing, rejected the Appellant's objections. Concerning the use of starch instead of the PAM suggested in document D11, the Respondent agreed with the analysis given in the contested decision that this difference was not disclosed in the prior art.
- VIII. The Appellant requested that the decision under appeal be set aside and that the patent be revoked.

The Respondent, in writing, requested that the appeal be dismissed.

Reasons for the Decision

Inventive Step

1. The patent in suit relates to the preparation of mineral filled paper wherein a chemical flocculant is added to the furnish to bind and retain the filler inside the lumens of the pulp fibre under dilute, high shear conditions of papermaking (patent, paragraph 1).

2. According to the patent in suit, material costs for producing paper decrease in direct proportion with increasing amounts of filler in the paper. One of the methods known in the art to produce mineral filled paper is the technique of lumen loading which is accomplished through mechanical mixing of an aqueous slurry of mineral filler into an aqueous slurry of wood pulp fibre to place the filler particles directly inside the hollow spaces (lumens) of the pulp fibres. This technique is stated to offer the advantage of improved mechanical strength of the paper obtained

since fillers which are retained inside the fibres do not interfere with inter-fibre bonding. However, the fillers do not only migrate into the lumens but, just as well, can also diffuse out (patent paragraphs 4, 7, 11 and 20).

Consequently, the technical problem mentioned in the patent in suit consists in the provision of a process overcoming this deficiency of the lumen loading technique so that the mineral content in the produced paper is increased and material costs are reduced since less filler is lost during drainage (patent paragraph 8).

3. The Board agrees with the opinion of both parties and of the Opposition Division that document D11 represents a suitable starting point for the assessment of inventive step since it deals with the same technical problem as the patent in suit, namely to reduce the loss of filler from lumen loaded wood pulp fibre and the related advantages of increased filler content.

In particular, document D11 which is an article concerning lumen loading of bleached pulp teaches that bleached pulp, in particular dry lap bleached pulp, loads to a lower level than never-dried unbleached pulp since it is assumed that bleaching decreases the electrostatic charge of the fibres and drying reduces the surface area accessible to filler due to a collapse of the lumen which is only partially reversed upon rewetting. However, in practice, fillers are normally added to bleached pulp and in many paper mills bleached pulp is in the form of a dry lap pulp. Therefore, the article reports scientific work about lumen loading of

dry-lap bleached pulp. It is shown that the addition of polymeric retention aids may decrease the loss of filler from the lumens when subjected to severe agitation (page J230, left-hand column, first to fourth paragraph). Specifically, it was found that the addition of polymer to lumen loaded pulp (post-treatment) greatly improves the resistance of the pulp to unloading and that cationic charged polyacrylamide (PAM) was most effective compared with various other, not identified polymers (page J232, middle column, first full paragraph in combination with page J231, right-hand column, first full paragraph).

Hence, document D11 discloses the use of cationic PAM in a papermaking furnish of dry lap pulp fibre and mineral filler to fix the mineral inside the lumens of the wood pulp.

4. Further it is mentioned in document D11 that cationic PAM can cause flocculation of the filler (page J231, right-hand column, second paragraph and page J233, left-hand column, first paragraph).

Therefore, the Board agrees with the opinion expressed in the contested decision that the subject-matter of Claim 12 differs from that disclosure in document D11 only in that ionic starch, e.g. cationic starch, is used instead of cationic PAM and that the papermaking furnish is never-dried pulp instead of the dry lap pulp usually present in paper mills as stated in document D11.

The Board further agrees that the technical effect obtained by using never-dried pulp is well-known in the

art and consists in that the lumens are loaded more easily (see also point 3 above) but is not linked to the technical effect obtained by applying cationic starch.

Concerning this latter feature, the Board notes that no evidence is on file showing that the performance of the claimed use of cationic starch would at least be comparable to that of the cationic PAM suggested in document D11. Hence, it is not plausible that the technical problem actually solved in view of document D11 consists in the provision of an alternative means for retaining the filler in the lumens and saving costs by reducing the loss of filler (point 2 above).

5. However, it is credible - as argued by the Appellant already in its statement of grounds of appeal and never contested by the Respondent - that starch derivatives are cheaper than synthetic polymers like PAM. The technical result and, hence, the technical problem actually solved in view of the disclosure of document D11 may, thus be defined to consist in the provision of another means of saving costs.

The Board notes that saving costs is an elementary problem existing throughout all the technical fields, hence also to the field of papermaking.

6. It remains to be decided whether, in view of the available prior art documents, it was obvious for someone skilled in the art to solve the technical problem of saving costs by using cationic starch instead of cationic PAM for retaining the mineral filler within the lumens.

7. The Respondent relied on the contested decision (point 5.21 of the decision) where particular attention was drawn to the fact that the authors of document D11 suppose that the effect of improved retention of mineral filler within the lumens is "presumably" due to the formation of a coating of PAM over the filler-coated surface (page J233, left-hand column, first full paragraph) whereas according to the patent in suit the starch acted as a flocculent to increase the filler particles so that they cannot pass out of the lumens (page 4, paragraph 24). Since starch had a less strong affinity for fibres than for fillers, so it is argued in the decision, the using of starch would possibly not lead to a filler coating on the surface of the fibres as apparently desired in document D11.

Hence, the Respondent concluded in writing that the mechanisms of filler retention in the patent in suit and in document D11 were different and that there was no suggestion in the art that starch might be used to flocculate filler particles within the lumens.

8. The Board is not convinced by these arguments for the following reasons:

Firstly, the mechanism indicated in document D11 as the "polymer treatment is presumably a coating of polymer over the filler-coated surface" is based on a presumption. Apart from that, this mechanism would not require a stronger affinity of the polymer for the fibre than for the filler since it is further assumed in document D11 that the action of the polymer would be on the filler particles by anchoring the weakly bound

particles to the more strongly bound particles
(page J233, left-hand column, first full paragraph).

Therefore, the Board finds credible as argued by the Appellant during oral proceedings that depending on the circumstances, cationic starch is also able to form a coating in the sense of document D11.

The equivalence of starch and PAM as filler retention aids is also evident from document D7. This document was cited by the Appellant in its statement of grounds of appeal in combination with document D11 and discloses a study on increasing the filler loading of paper to save cellulosic raw material by using either hydrocol or cationic starch as retention aids. It is shown that both retention aids are very effective but the effect is more pronounced with hydrocol (page 93, Abstract, last four lines, page 96, right-hand column, and page 97, Table I).

The Board has no reason to doubt the Appellant's statements at the oral proceedings that hydrocol consist essentially of cationic PAM.

10. Since starch is known to be cheaper than PAM (point 5 above), the Board concludes, therefore, that the skilled person knowing from document D11 that cationic PAM may act as flocculant for the filler and from document D7 that cationic starch may be used for filler retention instead of cationic PAM would consider to replace the PAM of document D11 by starch in order to save costs if an optimum performance as retention aid is not an issue (point 4 above).

11. For these reasons, the Board finds that the subject-matter of Claim 12 of the Respondent's only request does not comply with the requirements of Articles 52(1) EPC and 56 EPC.

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The patent is revoked.

The Registrar:

The Chairman:

C. Vodz

P.-P. Bracke