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Bezeichnung der Erfindung: Baled wastepaper product containing a  
Title of invention: de-inking chemical  
Titre de l'invention :

Klassifikation / Classification / Classement : B 65 D 71/00

**ENTSCHEIDUNG / DECISION**  
vom / of / du 23 January 1986

Anmelder / Applicant / Demandeur : Fibre-Chem Corp.

Patentinhaber / Proprietor of the patent /  
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Article 56  
"Inventive step - Commercial success"

Leitsatz / Headnote / Sommaire

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Case Number: T 191 / 82

**DECISION**  
of the Technical Board of Appeal 3.2.1  
of 23 January 1986

**Appellant:** FIBRE-CHEM CORPORATION  
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U.S.A.

**Representative:** Geering, Keith Edwin  
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**Decision under appeal:** Decision of Examining Division 082 of the European Patent  
Office dated 3 August 1982 refusing European patent  
application No 80 900 996.2 pursuant to Article 97(1)  
EPC

**Composition of the Board:**

Chairman: M. Huttner  
Member: P. Lançon  
Member: P. Ford

Summary of Facts and Submissions

- I. European Patent Application No. 80 900 996.2 filed on 25 April 1980 as an international application PCT/US/80/00462 claiming priority from a national US application of 30 April 1979 and published under the International Publication No. WO 80/02411 was refused by a decision of the Examining Division 082 of 3 August 1982. The decision was based on original Claims 1 to 11.
- II. The reason given for refusal was lack of novelty. According to the Examining Division, a bale of waste paper wherein ligninsulfonate is incorporated is known from US-A-4 148 952. Since it is known that ligninsulfonate is a synthetic organic surface agent, no difference can be seen between the subject-matter of Claim 1 and US-A-4 148 952.
- III. The Applicants lodged an appeal against this decision on 4 October 1982 and paid the relevant fee in due time. The Grounds for Appeal were given on 8 December 1982 together with a new set of 8 claims. According to the Appellants, ligninsulfonate is employed in the opposed document as a binder. There is no mention of de-inking and there is nothing in this specification to lead a person facing the problem solved by the invention to replace ligninsulfonate with another surface active agent in a different class which may or may not be a binder, and thus arrive at the present invention.
- IV. In answer to a communication of the Board, the Appellants completed the passage of the description relating to the state of the art and cited 2 documents describing methods of treating pulped paper products using non-ionic synthetic organic surface active agents. One of them, US-A-3 808 089 was quoted for the first time in the procedure.

- V. In his submission in response to a further communication of the Board calling the inventive step in question on the basis of the newly cited documents, the Appellants stressed that the invention would greatly simplify the chemical testing work that must be done at the paper mill, because the waste paper dealer, who is particularly suited for "tailoring" bales of waste paper to meet the requirements of the paper mills, can now take over this work. For this reason, the invention had achieved considerable commercial success in the USA. In consequence, the de-inking chemicals are used with maximum efficiency, and consistent de-inking results are obtained.

Turning to the citations, the Appellants submitted that a person skilled in the art, from a consideration of the cited references, would not be led to the idea of incorporating de-inking chemicals into a bale of waste paper.

- VI. the Appellants request that the decision under appeal be set aside and the patent be granted on the basis of the set of amended claims received on 8 December 1982.

Claim 1 reads as follows :

A bale of waste paper containing incorporated therein an effective amount of water-soluble or water-dispersible de-inking chemical for de-inking said waste paper, said de-inking chemical consisting essentially of a non-ionic synthetic organic surface active agent effective to disperse ink present on the waste paper in the form of very small ink particles when the bale of waste paper is de-inked and pulped in an aqueous alkaline bath.

Reasons for the Decision

1. The appeal complies with the requirement of Articles 106 to 108 and Rule 64 EPC. According to the Board's decision of 16 April 1985, the Appellants have been restored in their rights and European patent application No. 80 900 996.2 is to be regarded as not having been withdrawn for failure to pay the fifth year renewal fee.

The appeal is admissible.

2. There is no formal objection to the current version of the claims since it is adequately supported by the original disclosure. Indeed, with the mere addition of the feature "non-ionic", Claim 1 has been limited to include the preferred synthetic organic surface active agents (Description : sentences bridging pages 3 and 4; page 6 line 24 to page 7, line 4).

New sub-Claims 2 to 8 correspond to the original Claims 7, 8, 9, 2, 4, 5, and 6 respectively.

3. The application relates to a bale of waste paper which can be shipped or delivered to a paper mill for de-inking and preparation of paper products therefrom - which bale has been treated so as to contain de-inking chemicals which consists essentially of a non-ionic synthetic organic surface active agent in an effective amount to disperse ink present in the form of very small ink particles when the bale is de-inked and pulped at the mill (description page 1, lines 1 to 3; page 2, lines 12 to 22 and Claim 1).
4. A comparable block of waste paper is known from US-A-4 148 952. According to the acknowledgement of the art in this document, to re-use paper, it was necessary to first collect the paper at numerous locations, tie it into bales, containerize the bales and then ship it to a central plant

where it is processed for re-use. In contradistinction thereto the invention disclosed in this US specification describes a method of converting the waste paper to a stable block which can be shipped in bulk form. The blocks are composed of paper fragments which have been subjected to high pressure and then held tightly together by an adhesive such as ligninsulfonate. The adhesive is water soluble to facilitate breaking up of the blocks for re-use at the recycling plant (col. 1, lines 18 to 21 and lines 28 to 55).

5. As explained in the description of the application blocks of the type described in US-A-4 148 952 are disadvantageous because they require a subsequent specific de-inking process, since ligninsulfonate is merely used as a binder. Although known as dispersant and emulsifier, it was established by the Appellants that it would not be a successful de-inking agent (Statement of Grounds, points 3 and 4 and Appendix II).

Because of the variations in waste paper from various sources, the de-inking process can become complex and some paper mills do not have extensive experience in and knowledge of de-inking waste paper through dispersion of ink particles in the pulper.

6. Starting from US-A-4 148 952 as being undisputedly the most relevant prior art, the problem is to provide an improved shipable bale product devoid of these drawbacks, that is to say to provide a pretreated waste paper bale containing the necessary chemicals so that it is no longer necessary to charge the mill personnel with the complex work of adding the proper de-inking chemicals in the quantities required.

7. The solution claimed by the Appellants in Claim 1 consists in bales containing incorporated therein a water-soluble or water-dispersible non-ionic synthetic organic surface active agent in an amount effective to disperse ink present on the waste paper in the form of very small ink particles when the bale of waste paper is de-inked and pulped in an aqueous alkaline bath.

According to the description, at the stage of the de-inking operation, it is necessary for the mill personnel merely to add the alkali and, therefore, the de-inking operation at the paper mill is simplified. After consideration of the example and the experiment submitted with the Statement of Grounds (Appendix II), the Board is satisfied that the problem is effectively solved by the object of the claimed invention.

8. After limitation of Claim 1 to specify the surface active agent as being non-ionic, the novelty of the subject-matter of Claim 1 is no longer questioned. Nevertheless, it still remains to be examined whether the conditions for inventive step are met by the subject-matter claimed.
9. Facing the problem of finding bales according to the alleged invention, the skilled man must, first, find a suitable de-inking agent and secondly, incorporate it before the pulping stage.
- 9.1 As an argument in favour of an inventive step, the Appellants put forward that in the claimed invention a bale of waste paper in contradiction to a strongly compressed block as known from US-A-4 148 952 is demanded. This argument may be acceptable for proving novelty of Claim 1, but in order to emphasize inventive distinctiveness, it is not relevant in view of the problem to be solved. According to the description, it is customary to bale waste paper in

compressed bales, and it is preferred to treat the bales with a solution containing a water soluble adhesive (description, page 4, lines 23 to 25 and page 5, lines 1 to 4). In both cases, the product is a well known bulk of waste paper fragments brought into a form easy to handle and to ship, irrespective of the manner of holding the fragments together. Using one or the other is simply a matter of preference and in both cases either the blocks or the bales must be broken up (US-A-4 148 952, col. 1, lines 54 to 55) for de-inking. Therefore, the selection of either one of these forms is immaterial.

- 9.2 In the present case, the skilled man must be the one skilled in the processes of de-inking paper products, and as such must be aware of emulsifiers used in de-inking processes. US-A-3 808 089, cited by the Appellants, describes the use of water soluble non-ionic emulsifiers for de-inking which correspond to those described in the effective claims, and it is stated that the methods of de-inking paper suggested previously have generally involved the steps of either the separation of the ink from the slurry or the bleaching of released fibers to eliminate the ink color from the fiber-containing system. Therefore, an object of the invention described in US-A-3 808 089 was to provide a method of manufacturing coated paper products from printed and coated paper products i.e. "furnish" manufactured from chemical pulp, which method utilizes existing conventional paper-making equipment and which does not require the use of special washing steps, bleach treatment, or the like. US-A-3 808 089 suggests that the "furnish" be pulped in the presence of an effective amount of ethoxylated aliphatic alcohol emulsifier. Water insoluble alcohols having from 5 to 20 carbons are useful as the hydrophobic moiety, and the mole ratios of combined ethylene oxide to hydrophobe can vary from 1:1 to 1:50. The emulsifier additive is added in an amount from 0.1% to 5.0%



by weight based on the weight of the coloured stock used. Ethoxylated alkyl phenols commercially available under the designation "IGEPAL CO" can be used. These surface active agents have a highly beneficial effect on the dispersing of ink particles which are visible under 30 power magnification to the extent that they are no longer visible (see col. 1, lines 36 to 41; col. 1 line 63 to col. 2, line 2; col. 2, lines 42 to 44 and 54 to 66; col. 3, lines 30 to 32 and lines 50 to 59).

In view of the problem underlying the alleged invention, the skilled man aware of this prior art document must be lead to the use of the herein described emulsifiers, more especially as he aims at the simplification at the paper mill which is equipped with conventional machinery completely unsuited for a special washing step. Thus, the addition of these non-ionic surfactants in the de-inking process must be regarded as obvious to the person skilled in the art.

- 9.3 The surface active agent must be present in the pulper at the de-inking stage. Consequently it must then be added to the waste paper, either at this stage or before. The Appellants have observed in practical mill operation that some paper mills do lack extensive experience in and knowledge of de-inking waste paper through dispersion of ink particles in the pulper. To overcome this problem, it was evident to seek a product which would eliminate the necessity for the mill personnel to perform the de-inking process. And once the skilled man has been taught which chemical must be added to arrive at efficient de-inking, no difficulties had to be overcome in incorporating that chemical in the waste paper before delivery, i.e. in the preceding preparation stage of the bale.

In fact, the more delicate work is merely shifted from the paper mill to the bale maker, who is better qualified to do this work.

- 9.4 As a secondary consideration in favour of inventive step, the Appellants submit that the product has achieved a considerable commercial success. They suggest that paper mills which do not have experience in de-inking waste paper and accordingly did not use large amounts of de-inking grades of waste paper would consider it as a fiber source.

it is not denied that, in certain cases, commercial success may be an indication for inventive step if it can be shown by evidence that this success clearly derives from a technical feature claimed. However, the Appellants failed to submit convincing evidence in this respect.

- 9.5 Therefore the bale as claimed in Claim 1 is an obvious solution to the problem to be solved. Consequently, the subject-matter of Claim 1 must be considered as lacking the inventive step required by Article 56 EPC. Claim 1 cannot be allowed having regard to Article 52(1) EPC.

10. The Claims 2 to 8 which are dependent on Claim 1 have as subject-matter special embodiments of the invention according to Claim 1. They are not allowable since their acceptance is contingent on the allowability of Claim 1, which has been denied.

#### ORDER

For these reasons it is decided that

The appeal against the decision of the Examining Division of 3 August 1982 is dismissed.

The Registrar

The Chairman

B A Norman

M. Huttner