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Bezeichnung der Erfindung:
Title of invention:
Titre de l'invention : Pressure-sensitive recording material and process for its production, coating composition, capsules and microcapsules therefor.

Klassifikation / Classification / Classement : B 41 M 5/00 B 41 M 5/12

ENTSCHEIDUNG / DECISION

vom / of / du 17.February 1987

Anmelder / Applicant / Demandeur : Appleton Papers Inc.

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Article 56

Kennwort / Keyword / Mot clé : "Inventive step - obvious to try; additional effect"

Leitsatz / Headnote / Sommaire

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Case Number : T 286/84

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 17 February 1987

Appellant : Appleton Papers Inc.
PO Box 359
Appleton Wisconsin 54912 (US)

Representative : Norris, Richard John et al,
The Wiggins Teape Group Ltd.
Group Patents Dept.
Butlers Court
Beaconsfield, Bucks. (GB)

Decision under appeal : **Decision of Examining Division 086 of the European Patent Office dated 4 June 1984* refusing European patent application No. 79 302 129.6 pursuant to Article 97(1) EPC**

* issued on 3 August 1984

Composition of the Board :

Chairman : P. Delbecque
Member : C. Wilson
Member : P. Ford

Summary of Facts and Submissions

I. European patent application No. 79 302 129.6 filed on 5 October 1979 and published on 28 May 1980 under publication No. 0 011 367 was refused by a decision of Examining Division 86 of the European Patent Office of 4 June 1984, notified on 3 August 1984. The decision was based on Claims 1 to 12 filed on 26 November 1980 of which the main Claims 1, 6, 7 and 12 read as follows:

1. **Pressure-sensitive record material** including substrate carrying a composition comprising both pressure rupturable capsules containing a solution of a substantially colorless chromogenic compound and pressure rupturable capsules containing a solid acidic resin which is substantially free of a liquid component and which reacts with said chromogenic compound on contact therewith to form a coloured image-forming compound, there being substantially no solvent in said composition other than that comprised in the solution of said chromogenic compounds.

6. **A pressure sensitive record material set** comprising at least one sheet of pressure sensitive record material as claimed in any one of the preceding claims.

7. **A coating composition** comprising both pressure-rupturable capsules containing a solution of a substantially colourless chromogenic compound and pressure rupturable capsules containing a solid acidic resin which is substantially free of a liquid component and which reacts with said chromogenic compound on contact therewith to form a coloured image forming compound, there being substantially no solvent in said composition other than that comprised in the solution of said chromogenic compound.

12. **A process for producing a self-contained pressure-sensitive record material** which process comprises applying a coating composition as claimed in any one of Claims 7 to 11 to a substrate and drying the applied coating.

II. The impugned decision cites the following documents:

US-A-3 672 935
US-A-3 737 410
DE-A-2 527 457
US-A-4 025 492, and
DE-A-2 402 384

and comes to the conclusion that the claimed subject-matter lacks an inventive step. In particular, it would be obvious to the man skilled in the art to apply the teaching of DE-A-2 527 457 with corresponding effect to the pressure sensitive self-contained record materials disclosed in US-A-3 672 935 and US-A-3 737 410 and thus to arrive at the pressure-sensitive record material as claimed in Claim 1.

III. A notice of appeal was filed on 14 September 1984 and the appeal fee was paid on the same date. The Statement of Grounds was filed on 26 November 1984. The Appellants argue that a combination of the cited documents to arrive at the subject-matter of Claim 1 could only be based on **ex post facto** analysis, since the disclosure of US-A-3 672 935 and US-A-3 737 410 relate to a different technical field from the disclosure of DE-A-2 527 457, and the problem solved by the teaching of DE-A-2 527 457 is different from that to be solved by the present invention. These arguments were reinforced in a reply dated 23 December 1985 to a Communication from the Board.

The Appellants request that the impugned decision be set aside and that a patent be granted based on Claims 1 to 12 filed on 26 November 1980. Additionally, they request reimbursement of the appeal fee.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.

2. Concerning the formal admissibility of the claims, it is observed that a comparison of Claims 1 and 7 of the claims under consideration with the original Claims 1 and 7 respectively, shows that they have been amended by the addition of two features, namely that (a) the solid acidic resin "is substantially free of a liquid component", and that (b) there is "substantially no solvent in said composition other than that comprised in the solution of said chromogenic compounds".

   There is no **explicit** recitation of either of these features in the original application. However, the question of whether there is sufficient **implicit** support in the original application need not be answered since the appeal fails anyway for other reasons as set out below.

3. An examination of the citations revealed by the search shows that none of them disclose pressure-sensitive record material having all the features set out in Claim 1. Since this has never been alleged, no detailed substantiation of this matter is required. The subject-matter of Claim 1 is therefore novel.

4. It remains to be examined therefore whether the subject-matter of the claim involves an inventive step. This examination results in the following observations:

4.1 According to US-A-3 672 935 a pressure-sensitive record material of the self-contained type (cf. column 5, lines 1-3) comprises a substrate which is coated with a composition containing pressure rupturable capsules which contain a solution of a substantially colourless chromogenic compound (cf. column 2, lines 25-42) and a solid acidic resin (cf. column 3, lines 5-12, lines 61-75; column 7, lines 39-64 and column 10, Example Ib, lines 12-17) which reacts with said chromogenic compound on contact therewith to form a coloured image-forming compound. No additional solvent is used.

The use of solid resin with encapsulated solutions of chromogenic compounds is further disclosed in US-A-3 737 410.

4.2 The problem to be solved with respect to this prior art is that of premature coloration and of print bleed. **Premature coloration** is exactly what it says, i.e. mixing of the colouring ingredients during handling before use, e.g. due to accidental breakage of the capsules. **Print bleed** (according to the Appellants) is caused by the migration of solvent through the paper under the influence of capillary action. The migrating solvent carries with it the dissolved coloured species formed by reaction between the dissolved chromogenic compound and the dissolved acidic resin, and so leads to "feathering" or "fuzziness" of the image, i.e. to print bleed.

4.3 This joint problem is solved in the present invention by encapsulating (in pressure rupturable capsules) the solid acid resin which is substantially free of a liquid component.

4.4 However, according to DE-A-2 527 457 a self-contained pressure-sensitive record material consisting of a substrate which carries a layer of a coating composition comprises both pressure-rupturable capsules containing a solution of a substantially colourless chromogenic compound and a dry solid acidic colour developing agent, e.g. a clay. The problem underlying the invention disclosed in this cited document was that of premature coloration between the encapsulated chromogenic compound and the solid acidic colour developing agent in the self-contained pressure-sensitive record material. In an effort to solve this problem it was found that encapsulation of the solid acidic agent (without any liquid) effectively prevented premature coloration between the two reactants of the coloured image-forming compounds.

If the man skilled in the art of pressure sensitive record materials could not find a solution to his problem of premature coloration and print bleed in the acidic **resin** colour developing reactant technology field, he would look to the neighbouring field of acidic **clay** colour developing reactant technology, and would find the solution proposed in DE-A-2 527 457. Since this solves at least part of the problem posed in the present application it would be obvious for him to at least try this solution, and to thus arrive at the present invention.

4.5 A closer examination of the mechanism of premature coloration does not allow for any different conclusion. In DE-A-2 527 457 the premature coloration is stated on page 2, lines 3-8 to be caused by the sharp edges of the colour developer particles. The Appellants claim that this can only apply to the clay particles and not to the acidic resin particles. However, the present application makes no reference to the form of the solid acidic resin particles, but it is clear for example from US-A-3 737 410, (see

column 1, lines 39 to 41 and column 2, lines 47 to 49) that the thermosetting resin from which the acidic resin particles are produced is hard enough to be ground in an attritor. Clearly such particles will be hard and could cause damage to the capsules containing the chromogenic material. The question of whether the resin particles actually have sharp edges or not is irrelevant since the Applicants themselves admit in their Statement of Grounds (dated 21 November 1984), paragraph 3.1, that "All types of self-contained pressure-sensitive record material are inherently prone to **premature coloration**, owing to the necessarily close proximity of the colour developing reactant and the chromogenic material with which it reacts". Since premature coloration forms part at least of the problem to be solved in the present application, the man skilled in the art would be expected to look in all fields in which this problem occurs.

4.6 The Appellants argue against the combining of the teachings of these documents in the following ways:

(i) the fields of acidic resin and acidic clay colour developing technology are so fundamentally different that the man skilled in the art faced with a problem in one field would not think to look for a solution in the other field;

(ii) that the problems are not the same so that it would not be obvious to combine the teachings, and

(iii) any such combination of documents could only be based on **ex post facto** analysis.

Having regard to point (i) above, it is agreed that in many ways the fields are fundamentally different, e.g. the acidic resins and acidic clays differ markedly in their chemical compositions and the manner in which they react with a chromogenic material to give rise to a coloured image-forming compound. However, they also have similarities. For example, they both involve the use of a component in a solid form together with encapsulated chromogenic material, and in this form they both suffer from premature coloration. It must be expected from the man skilled in the art to look for the solution to his problem in all neighbouring fields in which such a problem is likely to occur. Insofar therefore as the problem relates to premature coloration, (ignoring for the present the problem of print bleed), it must be expected from the man skilled in the art to search in both the acidic resin and the acidic clay field for a possible solution.

In respect of point (ii) above, it is accepted that the problems are not identical. The problem facing the Appellants was that of alleviating both premature coloration and print bleed. The Appellants have argued that since print bleed does not occur in the acidic clay field, the man faced with the linked problem of premature coloration and print bleed would not think to search in this field for a solution. The Board cannot however agree with this submission. Even if it is assumed for argument's sake that print bleed does not occur in the acidic clay field (which was not accepted by the Examining Division), DE-A-2 527 457 still gives the man skilled in the art an indication of how he can solve his premature coloration problem. There is no indication that this would not solve or would make worse his print bleed problem. Indeed, since the mechanism of print bleed was well known (e.g. see US-A-3 672 935, column 7, lines 59-64), the man skilled in the art would see that any solution of his premature coloration

problem which did not add solvent should at the very least not increase the problem of print bleed. Since there are therefore no clear reasons why the man skilled in the art should not at least try the solution suggested by DE-A-2 527 457, and since it was intended to solve at least part of the linked problem faced in the present application, it must be considered obvious to combine the teachings of these documents. The fact that the known solution also unexpectedly solves the other part of the problem does not render the solution automatically inventive, (see T 21/81 OJ EPO, 1/1983, page 15).

In the above point (iii) the accusation is made that **ex post facto** analysis has been applied to show how the invention **could** have been arrived at. Again, the Board cannot agree that such an **ex post facto** analysis has been undertaken. Objectivity in the assessment of inventive step has been achieved in conformity with the case law of the Boards of Appeal (see for example T 24/81, OJ EPO, 4/1983, page 133), namely by starting from the closest state of the art and objectively determining the technical problem which the invention solves. Consideration is then given to the question of obviousness of the disclosed solution to this problem for the man skilled in the art, based on what he **would** do rather than what he **could** do.

4.7 The subject-matter of Claim 1 is therefore lacking in inventive step, and this claim is therefore not allowable.

Since the Appellants state in their Statement of Grounds, dated 21 November 1984, that they accept for the purpose of the Appeal that the other claims stand or fall with Claim 1, these claims need not be considered here further.

5. The Appellants request refund of the Appeal fee on the basis that three substantial procedural violations have occurred.

5.1 According to Rule 67 EPC, "the reimbursement of appeal fees shall be ordered.... where the Board of Appeal deems an appeal to be allowable, ...".

5.2 Since the Board has not allowed the appeal, reimbursement of the appeal fee cannot be ordered.

Order

For these reasons it is decided that:

1. The appeal is dismissed.

2. Reimbursement of the appeal fee is refused.

The Registrar: The Chairman:

B A Norman P Delbecque