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DECISION
of 13 July 2004

Case Number: T 0393/01 - 3.3.2

Application Number: 91310106.9

Publication Number: 0484172

IPC: A01N 43/64

Language of the proceedings: EN

Title of invention:

Synergistic combinations of iodopropargyl compounds with hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine

Patentee:

BUCKMAN LABORATORIES INTERNATIONAL, INC.

Opponent:

SCHÜLKE & MAYR GmbH
Arch Chemicals, Inc.

Headword:

Synergistic combination/BUCKMAN LABORATORIES INTERNATIONAL INC.

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step - no: improvement expected in the light of the prior art; optimisation"

Decisions cited:

T 0296/87

Catchword:

-



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D E C I S I O N
of the Technical Board of Appeal 3.3.2
of 13 July 2004

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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
24 January 2001 concerning maintenance of
European patent No. 0484172 in amended form.

Composition of the Board:

Chairman: G. F. E. Rampold
Members: J. Riolo
P. Mühlens

Summary of Facts and Submissions

- I. European patent No. 0 484 172 based on application No. 91 310 106.9 was granted on the basis of a set of 11 claims for the Contracting States AT, BE, CH, DE, DK, FR, GB, GR, IT, LI, LU, NL and SE, and a set of 11 claims for the Contracting State ES.

Independent claim 1 of the set of claims for the Contracting States other than ES read:

"1. A composition comprising (a) hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine and (b) an iodopropargyl compound, said composition containing an amount of (a) and (b) synergistically effective to reduce the growth of microorganisms."

This claim is identical to the product claim of the set of claims for Contracting State ES.

- II. Notices of opposition were filed against the granted patent by the appellant (opponent 2) and by opponent 1, who is party as of right to the appeal proceedings.

The patent was opposed under Article 100(a) EPC for lack of novelty and inventive step and under Article 100(b) EPC for insufficiency of disclosure.

The following documents were inter alia introduced during the opposition proceedings and remain relevant for the present decision:

- (1) Developments in Industrial Biology 1979,
pages 37-39

- (6) EP-A-327220
- (9) US-A-4954109.

III. The Opposition Division maintained the European patent in an amended form under Article 106(3) EPC by its decision pronounced on 1 December 2000.

In its reasons for the decision under appeal, the Opposition Division found that the sole request before it, consisting of an amended set of 8 claims for the Contracting States other than ES and an amended set of 8 claims for Contracting State ES and a consequentially amended description, all filed with the respondent's letter of 23 October 2000, met the requirements of the European Patent Convention.

Independent claim 1 of the Contracting States other than ES and the product claim of Contracting State ES were both restricted to iodopropargyl carbamate as the iodopropargyl compound (b).

Concerning the ground of opposition mentioned in Articles 100(b) and 83 EPC, the Opposition Division considered that the objection of insufficiency of disclosure was not sufficiently substantiated.

As regards novelty, no objection under Article 54 EPC was raised by the opponents with respect to the amended set of claims under consideration before the first instance, and the Opposition Division saw no reason to differ.

As regards inventive step, the Opposition Division considered citation (1) to represent the closest state

of the art, because this citation taught that combinations of 2-[(hydroxymethyl)amino]ethanol with 3-iodo-2-propynylbutyl carbamate were efficient antimicrobial agents. Given this closest state of the art, the Opposition Division defined the problem to be solved as the provision of antimicrobial combinations in which the amount of the expensive IPBC, namely 3-iodo-2-propynylbutyl carbamate could be reduced without a substantial reduction in the antimicrobial activity.

In the Opposition Division's view, the solution to this problem, that is to say the combination of 3-iodo propargyl carbamate (IPC) with hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine ("triazine"), was inventive because there was nothing in the available prior art which would direct the skilled person towards this particular combination in order to lower the concentration of the amounts of antimicrobial agents necessary to achieve the desired antimicrobial effect.

- IV. The appellant (opponent 2) lodged an appeal against the said decision.

- V. By its letter dated 12 May 2004 Opponent 1 informed the board that it would not be represented at the oral proceedings. No other submission was made by Opponent 1 during the appeal proceedings.

- VI. Oral proceedings were held before the Board on 13 July 2004.

VII. In summary, the appellant submitted that the only difference over document (1) was the replacement of IPBC by IPC in the prior art biocide combination with "triazine".

In its view, that replacement was obvious in the light of document (9), which taught that IPC was a more effective biocide than IPBC.

As to the synergistic effect, it argued that the prior art combination was in fact also a synergetic combination and that the skilled person would have found, in any case, just by routine experimentation, that the biocide combination of the patent in suit was synergic.

VIII. The respondent made no written submission. During the oral proceedings it mainly agreed with the reasoning and conclusions of the Opposition Division. It stressed that the claimed biocide combination involved an inventive step because of the presence of a synergetic effect which was not foreseeable in the light of the available prior art.

IX. The appellant requested that the decision under appeal be set aside and that European patent No. 0 484 172 be revoked.

The respondent requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.

2. *Article 56 EPC*

- 2.1 The patent provides for an antimicrobial combination comprising (a) hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine ("triazine") and (b) iodopropargyl carbamate (IPC), which produce a synergistic effect (page 2, lines 3 to 5, page 3, lines 25 to 26 and 40 to 43, page 4, lines 13 to 19).

Document (1) relates to a study comparing three different biocidal compositions, namely, a composition containing 2-[(hydroxy-methyl)amino]ethanol and 3-iodo-2-propynylbutyl carbamate, another containing an amino tin complex and a last one containing 2-[(hydroxy-methyl)amino]ethanol and mercuric acetate (tables 9 and 10).

This scientific article, which addresses the problems linked to the use of mercurial products, concludes that 2-[(hydroxymethyl)amino]ethanol and 3-iodo-2-propynylbutyl carbamate at a concentration of 0,05% (ie 500 ppm) were the most efficient means of protection against microbiological spoilage (page 37, lines 18 to 20, and 40 to 43).

During the opposition proceedings and during the appeal proceedings, the appellant explained that it was well-known in the field that the biocide named 2-[(hydroxy-methyl)amino]ethanol is a monomeric entity which

readily condensates forming the thermodynamically most stable trimeric triazine compound, namely hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine ("triazine").

Therefore, it was clear to the skilled person that "triazine" was the compound used in document (1), that is to say the same compound as the one used in the patent in suit.

These explanations were accepted by the Opposition Division and confirmed by the respondent during both the opposition and appeal proceedings.

As they appear to be chemically well-founded, the Board sees no reason to differ.

Accordingly, the Board agrees with the parties that this document (1), which actually discloses biocidal compositions containing "triazine" and IPBC instead of "triazine" and IPC as in the contested patent, represents the closest prior art.

- 2.2 Accordingly, the problem to be solved as against document (1) can be seen as the provision of an improved (more efficient) biocidal composition.
- 2.3 This problem is solved by the subject-matter of claim 1 by replacing the substituted iodopropargyl compound (IPBC) with the unsubstituted (IPC) and, in the light of working examples 1, 2 and 3 of the patent in suit, the Board is satisfied that the problem has been plausibly solved.

In fact, in the light of the examples of the patent in suit, a combination containing 25 ppm of IPC and 250 ppm of "triazine" is effective and produces synergistic effects, whereas, when used separately, 2000 ppm of "triazine" and 500 ppm of IPC are required.

Document (1), in contrast, discloses a combination containing 500 ppm of both ingredients (see 2.1).

2.4 Thus, the question to be answered is whether the proposed solution, ie whether the replacement of IPBC by IPC was obvious to the skilled person in the light of the prior art having regard to the synergistic effect achieved by this replacement.

As regards the first aspect, document (9), shows precisely that IPC is a more effective biocide than IPBC (see comparative example in example 2, table II).

As regards the second aspect, ie the effect achieved, the Board notes that document (1) is silent about any synergetic effect at all. This document is mainly concerned with the problem of finding efficient alternatives to the mercury products as biocides.

Document (6) gives however a hint that the combination of iodopropargyl derivatives and formaldehyde donors, such as "triazine", which is described as a formaldehyde donor in the patent in suit (see page 3, lines 1 and 2), results in a synergistic combination (page 3, lines 3 to 8).

Therefore, the Board is satisfied that the skilled person faced with the problem of improving the

efficiency of the biocide mixture disclosed in (1) would in any case replace the IPBC biocide by the more active IPC just by following the teaching of document (9) and arrive at the amount used in the patent in suit by mere optimisation measures prompted by the teaching in document (6).

2.5 The main argument raised by the respondent was that the teaching in document (6) is very broad and that it is, in general, not possible to foresee whether a synergetic effect will occur for two specific chemical structures before testing, so that an inventive step should be acknowledged for the claimed subject-matter.

2.6 The Board does not however share the respondent's point of view that an inventive step could be recognised on the basis of the synergetic effect in any case, just because it is not foreseeable.

The Board is convinced that, as a rule, before using a biocide on a large scale, the skilled person would carry out routine experiments in order to optimise the amount of the active ingredients for economical and environmental reasons, so that he would inevitably end up with the amount disclosed in the contested patent without an inventive step.

Indeed, according to established case law of the boards of appeal (see eg T 296/87, OJ EPO 1990, 195), enhanced effects cannot be adduced as evidence of inventive step if they emerge from obvious tests. Since, in the present case, tests with the combination of "triazine" and IPC were obvious in view of the task at hand, discovery of a synergistic effect exhibited by such a

combination cannot be regarded as an indication of inventive step.

Accordingly, in the absence of any evidence to the contrary, the Board concludes that, even without the teaching of document (6), the synergetic effect cannot represent an inventive step since the prior art points towards the claimed combination.

The Board wishes however to stress that the situation could have been assessed differently if the prior art was silent about the present combination.

In view of the foregoing, the Board judges that the subject-matter of claim 1 of the set of claims for the Contracting States other than ES and the product claim of the set of claims of Contracting State ES does not involve an inventive step as required by Article 56 EPC.

Since these claims in the only sets of claims under consideration are not allowable, there is no need for the Board to consider the remaining claims.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar

The Chairman

A. Townend

G. Rampold