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Datasheet for the decision of 8 April 2015

Case Number: T 0776/14 - 3.3.01

Application Number: 07075456.9

Publication Number: 1820398

IPC: A01N43/80, A01N37/10, A01P1/00

Language of the proceedings: EN

Title of invention:
Microbicidal composition

Applicant:
Rohm and Haas Company

Headword:
Microbicides/ROHM AND HAAS

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step (yes): non-obvious further synergistic microbicidal compositions

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Case Number: T 0776/14 - 3.3.01

D E C I S I O N
of Technical Board of Appeal 3.3.01
of 8 April 2015

Appellant: (Applicant)	Rohm and Haas Company 100 Independence Mall West Philadelphia, PA 19106-2399 (US)
Representative:	Houghton, Mark Phillip Patent Outsourcing Limited 1 King Street Bakewell, Derbyshire DE45 1DZ (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 12 November 2013 refusing European patent application No. 07075456.9 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	A. Lindner
Members:	L. Seymour
	M. Blasi

Summary of Facts and Submissions

I. The present appeal lies from the decision of the examining division refusing the European patent application No. 07 075 456.9, published as EP-A-1 820 398, as a divisional application of the parent application number 05 257 046.2, published as EP-A-1 665 933.

II. The following documents were cited in the European search report:

(1) EP-A-1 332 675

(2) P J Collier et al., J. Appl. Bacteriol., 1990, 69, 569-577

(3) EP-A-1 245 153 (4) EP-A-0 787 430

(5) EP-A-0 390 394 (6) EP-A-0 923 867

(7) EP-A-0 435 439 (8) US-A-4 454 146

The following additional document was cited by the appellant in the statement of grounds of appeal:

(9) US-B-6 361 788

III. The following abbreviations are used below:

BIT 1,2-benzisothiazolin-3-one

MIT 2-methyl-4-isothiazolin-3-one

IV. The decision under appeal was based on a main request and three auxiliary requests, all filed with letter dated 21 October 2013.

The claims of the main request read as follows:

"1. A microbicidal composition comprising:
(a) 1,2-benzisothiazolin-3-one; and
(b) benzoic acid or its salts;
in a weight ratio of (a):(b) of 1:5 to 1:2000.

2. A composition according to claim 1, wherein component (b) is sodium benzoate."

V. The examining division considered that the subject-matter claimed in the main request fulfilled the requirements of Articles 123(2) and 83 EPC, but lacked an inventive step. The closest prior art was identified as being document (1), which disclosed biocides comprising MIT and benzoic acid. The examining division considered, based on Table 26 of the application in suit and the data provided on 21 October 2013, and, in particular, with reference to the data for ratios of 1:250 and 1:500, that a synergistic microbicidal effect had not been shown over the whole claimed scope. The problem was therefore defined as lying in the provision of an improved microbicidal composition. The solution proposed represented a juxtaposition of known measures, which were obvious in the art, for instance for broadening the spectrum of microbial targets and/or increasing the microbicidal activity against one microbial target.

VI. The appellant (applicant) lodged an appeal against this decision. With the statement of grounds of appeal dated 5 March 2014, the appellant filed a main request and

auxiliary requests 1 to 3, which were identical to the requests considered in the decision under appeal, and additionally filed an auxiliary request 4.

The appellant requested in writing that the decision under appeal be set aside and that a patent be granted on the basis of the main request, or, alternatively, on the basis of the auxiliary request 1 to 4, all filed with the statement of grounds of appeal dated 5 March 2014. Oral Proceedings were requested in the event that the board of appeal was inclined to refuse the main request.

Reasons for the Decision

1. The appeal is admissible.

2. *Inventive step, main request (Articles 52(1) and 56 EPC)*

2.1 Claim 1 is directed to microbicidal compositions comprising combinations of BIT and benzoic acid or its salts in specific ranges of weight ratios of 1:5 to 1:2000 (cf. above point IV). These combinations are disclosed to be synergistic, and to be useful in inhibiting the growth of microorganisms in various loci (application as originally filed, page 1, lines 3, 4; page 2, lines 9 to 14; and page 8, line 4 to page 9, line 5).

2.2 Document (1) can be seen as representing the closest state of the art.

Document (1) relates to synergistic microbicidal combinations of MIT with one or more selected commercial microbicides, with areas of application similar to those disclosed in the present application (paragraphs [0001], [0011], [0018] and [0019] of document (1)). Benzoic acid is listed amongst the possible second components, and combinations thereof with MIT are specifically claimed and exemplified (see e.g. paragraphs [0005], [0036], [0037]; claims 1, 2).

2.3 The problem to be solved in the light of document (1), as indicated in the application in suit (page 1, lines 3, 4, 14 to 17 of the application as originally filed), can be seen in the provision of further synergistic microbicidal compositions.

2.4 The solution proposed relates to compositions characterised in that the MIT component is replaced by BIT.

The experimental results reported in Table 26 of the application as originally filed, for *A. niger* and *C. albicans*, in combination with the additional data submitted by the appellant in its letter dated 21 October 2013 for *C. albicans*, *A. brasiliensis*, *P. aeruginosa*, *E. coli*, and *B. cepacia*, provide representative data points that render it credible that synergy can be achieved for the claimed combinations within the range of weight ratios claimed.

With respect to Table 26, the appellant's argument can be accepted that the skilled person would disregard the data therein for *P. aeruginosa* and *E. coli*, including that for the ratios of 1:250 and 1:500 highlighted by the examining division, owing to the fact that component B, i.e. sodium benzoate, was used at a

concentration equal to Q_B (cf. page 10, lines 1 to 10); accordingly, this data is readily identifiable as being unsuitable for demonstrating synergy.

Consequently, having regard to the data discussed above, the board is satisfied that the problem has been solved.

2.5 It remains to be investigated whether the proposed solution would have been obvious to the skilled person in the light of the prior art.

2.5.1 As outlined above in point 2.2, document (1) itself discloses MIT to be a mandatory component of the compositions. Therefore, this document, taken alone, does not point to the solution proposed.

2.5.2 Document (2) also does not suggest the present solution:

Document (2) is a scientific article reporting a study into the growth inhibitory and biocidal activity of three isothiazolinone biocides, including MIT and BIT (see abstract). In Table 1, various estimates are provided for minimum growth inhibitory concentrations (MIC) against *S. pombe* and *E. coli*. However, the biological efficacies of individual isothiazolinones, as disclosed in document (2), do not allow the skilled person to draw any conclusions as to whether they would act synergistically when combined with further biocides. Therefore, no incentive is provided that would lead the skilled person to modify the compositions disclosed in document (1) in the expectation that synergy would be maintained.

2.5.3 A number of further documents were cited relating to synergistic microbicidal compositions comprising an isothiazolinone and a second component (see document (3), paragraphs [0001], [0008] to [0010]; document (4), page 3, lines 1 to 54; document (5), page 5, lines 42 to 52, examples and claims 1, 5; document (8), column 1, line 59 to column 2, line 21). However, in all these documents the second component is structurally remote from benzoic acid, and no valuable teaching can therefore be extracted therefrom with respect to possible modifications of the isothiazolinone component in combinations with benzoic acid.

Similarly, in document (6) and (7), benzoic acid is included in a list of possible additional components in the isothiazolone compositions (see document (6), claims 1, 2 and 6; document (7), claim 1 and page 5, lines 23 to 26). However, no specific compositions comprising benzoic acid are disclosed, nor is there any suggestion that synergy may be achieved by such a combination.

Finally, document (9) discloses synergistic compositions comprising MIT and BIT (see e.g. column 2, lines 3 to 16). Benzoic acid appears in an extensive list of further biocidal substances that may be added thereto (see column 2, line 66 to column 4, line 7). However, again, compositions comprising benzoic acid are not exemplified, and no teaching is provided with respect to potential synergistic effects between this optional component and the mandatory isothiazolinones.

Consequently, none of the above-mentioned documents are considered to render the present modifications to the

closest prior art compositions obvious, as a solution to the problem posed.

2.6 The board cannot follow the analysis of inventive step set out in the decision under appeal for the main request (cf. above point V):

As explained above in point 2.4, a reformulation of the problem to be solved is not considered to be necessary in the present case. Moreover, it is noted that, in the decision under appeal, the step of assessing whether the reformulated problem had been solved was omitted. Finally, no basis was given for the assertion that the skilled person would *a priori* expect an improvement on combining microbicides.

2.7 In view of the above considerations, the board concludes that the subject-matter of claim 1, and claim 2 dependent thereon, involves an inventive step. Therefore, the subject-matter of the main request fulfills the requirements of Article 56 EPC.

3. Since the main request is considered to be allowable, the board need not decide on the lower ranking requests. Moreover, oral proceedings are not considered to be necessary, in accordance with the appellant's conditional request (see above point VI).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the examining division with the order to grant a patent on the basis of claims 1 and 2 of the main request as filed with the statement of grounds of appeal dated 5 March 2014, and a description to be adapted thereto.

The Registrar: The Chairman:

M. Schalow A. Lindner

Decision electronically authenticated