

Internal distribution code:

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

**Datasheet for the decision
of 6 August 2015**

Case Number: T 0528/14 - 3.3.01

Application Number: 10179179.6

Publication Number: 2289330

IPC: A01N43/80, A01P1/00, A01N37/16

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 (no), obvious combination of prior art teaching



**Beschwerdekammern
Boards of Appeal
Chambres de recours**

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 0528/14 - 3.3.01

D E C I S I O N
of Technical Board of Appeal 3.3.01
of 6 August 2015

Appellant: Rohm and Haas Company
(Applicant) 100 Independence Mall West
Philadelphia, PA 19106-2399 (US)

Representative: Hoggins, Mark Andrew
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 15 November 2013 refusing European patent application No. 10179179.6 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. 10 179 179.6, published as EP-A-2 289 330, and filed as a divisional application of European patent applications No. 05 257 046.2 and 07 075 457.7.

II. Of the documents cited during the examination/appeal proceedings, the following are referred to below:

(1) EP-A-0 236 119

(7) US-B-6 361 788

(8) EP-A-1 161 867

(9) Scientific Committee on Cosmetic Products and Non-Food Products, SCCNFP/587/02, 2002, Opinion Concerning a Clarification on the Formaldehyde and Para-Formaldehyde Entry in Directive 76/768/Eec on Cosmetic Products, http://ec.europa.eu/food/fs/sc/sccp/out187_en.pdf

(10) S B Selvaraju, et al., Appl. Environ. Microbiol. 2005, 71(1), 542 - 546

(11) Preservation of Surfactant Formulations, F F Morpeth, (Ed.), 1995 Chapman & Hall, 6 - 29

III. The following abbreviations are used below:

BIT 1,2-benzisothiazolin-3-one

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

CMIT 5-chloro-2-methyl-4-isothiazolin-3-one

SHMG sodium hydroxymethylglycinate

NMPFA *N*-methyl-2-hydroxymethyleneoxypropyl-2'-hydroxypropylamine and its formaldehyde oligomers

DMO 4,4-dimethyloxazolidine

MBO mixtures of 5-hydroxymethoxymethyl-, 5-hydroxymethyl- and 5-hydroxypoly[methyleneoxy]methyl-1-aza-3,7-dioxabicyclo(3.3.0)octane

HMAE 2-[(hydroxymethyl)amino]ethanol

THPS tetrakis(hydroxymethyl)phosphonium sulfate

IV. The decision under appeal was based on the main and sole request filed with letter dated 31 January 2012, the single claim of which reads as follows:

"1. A microbicidal composition comprising:
(a) 1,2-benzisothiazolin-3-one; and
(b) sodium hydroxymethylglycinate,
said composition comprising a weight ratio of
1,2-benzisothiazolin-3-one to sodium
hydroxymethylglycinate of from 1:27 to 1:100."

V. The examining division considered that the subject-matter claimed lacked an inventive step, starting from document (1) as closest prior art.

VI. The appellant (applicant) lodged an appeal against this decision. With its statement of grounds of appeal, the

appellant filed a main request and an auxiliary request.

The main request is identical to that underlying the decision under appeal, as set out above in point IV.

The auxiliary request corresponds to the main request with the following additional limitation:

"and wherein said composition contains less than 1000 ppm of 5-chloro-2-methyl-4-isothiazolin-3-one".

- VII. In a communication sent as annex to the summons to oral proceedings, the issue of inventive step was discussed. Document (8) was identified as being a potential suitable starting point for the assessment of inventive step.
- VIII. With its response dated 11 July 2015, the appellant presented its argumentation with respect to inventive step starting from document (8), with reference to document (10) and additional data filed as Annex A.
- IX. Oral proceedings were held before the board on 6 August 2015.
- X. The appellant's arguments on the issue of inventive step, insofar as they are relevant to the present decision, may be summarised as follows:

The appellant acknowledged that document (8) could be seen as constituting the closest prior art.

The appellant defined the problem to be solved as lying in the provision of further synergistic microbicidal compositions. The data for *P. aeruginosa* in Table 1 of

the application in suit demonstrated that the problem had been solved.

Document (8) broadly related to synergistic microbicidal compositions comprising BIT and a formaldehyde-adduct compound. However, the specific disclosure was limited to four specific combinations, namely, with NMPFA, DMO, MBO and HMAE. From paragraphs [0005] and [0011] of document (8), the skilled person would already surmise that distinct behaviour was to be expected from each of these formaldehyde adducts.

Indeed, from document (11), the skilled person would have been aware of the fact that there was an almost limitless number of formaldehyde adducts potentially available. The biocidal activity thereof could not be attributed solely to the known biocidal activity of formaldehyde *per se*, and was unpredictable, as was the nature of any interaction with specific combination partners.

Confirmation could be derived from the data presented in document (10) and Annex A filed with letter of 11 July 2015. Specifically, in document (10) it was demonstrated that two different formaldehyde-releasing biocides exhibited significantly different microbicidal activities. Similarly, according to the data presented in Annex A, the interaction of THPS had been found to be antagonistic with one formaldehyde releaser, and synergistic with another.

Consequently, the skilled person would have no reason to expect that a synergistic interaction would be maintained upon substitution of the formaldehyde component in the combinations specifically disclosed in

document (8) with any other formaldehyde releaser, let alone specifically SHMG.

None of the remaining prior art cited during the examination and/or appeal proceedings suggested such a substitution. In particular, no such teaching could be derived from document (1): MIT and BIT were structurally distinct, and the skilled person would not extrapolate synergy observed in combinations with the former to the latter. Indeed, document (7) disclosed that MIT and BIT themselves interacted synergistically, and this confirmed that they were not to be seen as functional equivalents.

With respect to the auxiliary request, the appellant submitted that the same arguments with respect to inventive step applied as for the main request.

- XI. The appellant requested 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, both filed with the statement of grounds of appeal dated 25 February 2014.

Reasons for the Decision

1. The appeal is admissible.
2. *Main request, inventive step (Articles 52(1), 56 EPC)*
 - 2.1 The single claim of the main request is directed to a microbicidal composition comprising BIT and SHMG, in a range of weight ratios of "from 1:27 to 1:100" (cf. above point IV); these combinations are disclosed as

being synergistic (application as originally filed, page 1, lines 3, 4; page 6, lines 1 to 3).

- 2.2 Document (8) relates to synergistic biocidal compositions containing a formaldehyde adduct compound, in particular, NMPFA, DMO, MBO and HMAE, and an isothiazolone, in particular, BIT (see paragraphs [0001], [0011]; claims 1, 7 to 9; examples).

The board considers that this document represents the closest state of the art, in view of the fact the general disclosure thereof encompasses the compositions claimed. Therefore, this is considered to be a more appropriate starting point for assessing inventive step than document (1).

- 2.3 The problem to be solved in the light of document (8) may be defined as lying in the provision of further synergistic microbicidal compositions.

The solution proposed in claim 1 relates to compositions characterised in that the formaldehyde adduct components NMPFA, DMO, MBO or HMAE are replaced by SHMG.

The experimental results reported in Table 1 of the application in suit for *P. aeruginosa* render it credible that synergy can be achieved for the claimed combinations within the range of weight ratios claimed; it is noted that the data point for which Q_b is equal to Q_B may be disregarded as being unsuitable for demonstrating synergy. Having regard to this data, the board is satisfied that the problem has been solved.

- 2.4 It remains to be investigated whether the proposed solution would have been obvious to the skilled person in the light of the prior art.
- 2.4.1 Starting from these compositions exemplified in document (8), as set out above in point 2.2, the skilled person, seeking a solution to the problem posed, would look to further prior art relating to synergistic combinations of a formaldehyde adduct compound and an isothiazolone. One such document is document (1), which discloses combinations comprising one or more 2-alkyl-3-isothiazolones of formula (I), preferably CMIT, MIT or mixtures thereof, and a hydroxymethylaminoacetic acid derivative, most preferably SHMG (see e.g. page 2, lines 27 to 49; page 3, lines 27 to 30; and claims 1 to 4). The latter component is identified in document (1) itself as being a formaldehyde adduct compound (see page 2, lines 52 to 57), and this would also be known to the skilled person, for example, from document (9) (see point 5.1).

Hence, document (1) provides a further example within the general teaching of document (8), whereby SHMG is disclosed as the most preferred combination partner. It would therefore have been an obvious measure for the skilled person to replace the formaldehyde adduct components exemplified in document (8) with SHMG. Furthermore, the determination of the appropriate weight ratios, within the general ranges and test microorganisms disclosed in document (8) (cf. paragraphs [0011] and [0013]), required to achieve the desired synergism, would have been a matter of routine experimentation for the skilled person.

Thus, the skilled person would not require any inventive skill in order to arrive at the subject-matter claimed.

2.4.2 The appellant's further arguments in favour of inventive step do not hold for the following reasons:

It is firstly noted that document (10) and Annex A, relied on by the appellant to support its case, were made available after the priority date of the application in suit. Therefore, they cannot be useful in establishing what the skilled person would have done at the relevant date.

Moreover, the board cannot accept the appellant's submission that the skilled person would read the teaching of document (8) as being limited to its examples. On the contrary, the broad structural variation in the formaldehyde adduct components disclosed in paragraph [0011], for which the desired synergistic activity has been demonstrated (see Tables I to IV), support the general teaching of this document. The fact that a large number of such agents were available to the skilled person, with different ease of formaldehyde release (cf. document (11), Table 2.12), does not preclude a common synergistic action in combination with isothiazolones, specifically BIT, as taught in document (8). The fact that this common effect is not observed with other combination partners, such as THPS tested in Annex A, also cannot cast doubt on this teaching.

Similarly, there is no reason why the synergistic interaction between BIT and MIT, as demonstrated in document (7), would detract from the clear overall teaching of document (8). Indeed, document (7) rather

confirms the latter since it discloses the addition of "formaldehyde and formaldehyde source materials" to mixtures of MIT and BIT, and the synergistic biocidal activity thereof (see column 2, line 66 to column 4, line 7; column 4, lines 32 to 58; examples 19, 20).

2.5 Consequently, the subject-matter of the main request is rejected for lack of inventive step.

3. *Auxiliary request, inventive step*
(Articles 52(1), 56 EPC)

In this request, an upper limit is imposed on the concentration of CMIT. The appellant did not submit any additional arguments in favour of inventive step for this request. Indeed, in view of the fact that this component did not play any role in the above analysis, the reasoning and conclusions set out in point 2 apply *mutatis mutandis* to the subject-matter of the auxiliary request.

Hence, the auxiliary request is also rejected for lack of inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



M. Schalow

A. Lindner

Decision electronically authenticated