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Datasheet for the decision of 3 December 2021

Case Number: T 0511/19 - 3.3.01

Application Number: 09790327.2

Publication Number: 2306822

IPC: A01N37/34, A01N35/08, A01P1/00, A61K8/40, A61K8/42

Language of the proceedings: EN

Title of invention:
BIOCIDAL COMPOSITION AND METHOD

Patent Proprietor:
Dow Global Technologies LLC

Opponent:
Thor GmbH

Headword:
DBNPA and BNPD/Dow

Relevant legal provisions:
EPC Art. 100(a), 56

Keyword:
Inventive step - (no)

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Case Number: T 0511/19 - 3.3.01

D E C I S I O N
of Technical Board of Appeal 3.3.01
of 3 December 2021

Appellant: (Opponent)	Thor GmbH Landwehrstrasse 1 67346 Speyer (DE)
Representative:	Apenberg, Stefan Thor GmbH Landwehrstraße 1 67346 Speyer (DE)
Respondent: (Patent Proprietor)	Dow Global Technologies LLC 2040 Dow Center Midland, MI 48674 (US)
Representative:	Beck Greener LLP Fulwood House 12 Fulwood Place London WC1V 6HR (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 29 January 2019 rejecting the opposition filed against European patent No. 2306822 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	A. Lindner
Members:	M. Pregetter
	L. Bühler

Summary of Facts and Submissions

I. European patent No. 2 306 822 is based on European patent application 09790327.2, filed as an international application published as WO2010/009033.

It was opposed under Article 100(a), (b) and (c) EPC on the grounds that the claimed subject-matter lacked novelty and an inventive step, was not disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art, and extended beyond the content of the application as filed.

II. Claim 1 of the patent as granted reads as follows:

"1. A method for reducing the microorganism concentration in an alkaline aqueous medium by at least 4 $\log_{10}$ within 1 hour and protecting against future microorganism insult for at least one week, the method comprising including in the alkaline aqueous medium an effective amount of a biocidal mixture comprising 2,2-dibromo-3-nitrilopropionamide (DBNPA) and 2-bromo-2-nitro-1,3-propanediol (BNPD)."

III. The following documents, cited during the opposition proceedings, are referred to below.

(1) US 4732913

(3) Chervenak *et al.*, JCT CoatingsTech, February 2005, pp. 38-42

(5) Protectol® and Myacide® Bronopol Products, BASF

Technical Information, July 2004, 16 pages

(9a) English machine translation of JP2001302414, submitted on 10 October 2018, 10 pages

(10a) English machine translation of JP2002003311, submitted on 10 October 2018, 11 pages

(11a) English machine translation of JP2001288016, submitted on 10 October 2018, 11 pages

IV. In the opposition proceedings, the patent proprietor requested the rejection of the opposition and submitted auxiliary requests I to V, all filed on 18 October 2018.

The opposition division rejected the opposition. Documents (9a), (10a) and (11a) were not admitted into the proceedings.

V. The opponent appealed this decision. Notice of appeal was filed on 11 February 2019. The statement setting out the grounds of appeal was received on 28 March 2019 by telefax. The opponent (appellant) requested that the decision under appeal be set aside; the patent be revoked; and documents (9a), (10a) and (11a) be admitted. As an auxiliary request, oral proceedings were requested.

VI. The statement setting out the grounds of appeal was sent to the patent proprietor (respondent) on 5 April 2019 by registered letter. A time limit for the reply to the grounds of appeal of four months from this notification was set.

No reply was received.

VII. On 23 June 2021, the board issued a summons to oral proceedings, accompanied by a communication pursuant to Article 15(1) RPBA. In this communication, the board provided its preliminary opinion on inventive step.

Advice of delivery of the summons by the respondent was received on 1 July 2021.

On 30 November 2021, the respondent's representative informed the board by telephone that it did not intend to attend the oral proceedings.

Consequently, the summons to oral proceedings were cancelled, and the parties were informed that the appeal proceedings would continue in writing.

VIII. The appellant's arguments, in so far as they are relevant for the present decision, may be summarised as follows.

In addition to not meeting further requirements of the EPC, the subject-matter of claim 1 of the patent in suit did not involve an inventive step.

Document (5) represented the closest prior art. It taught the use of Bronopol (BNPD) as a biocide for long-term protection. Page 6 disclosed a process for long-term preservation of a slurry based on calcium carbonate having a pH of 9.5 against *Pseudomonas* and *Klebsiella*. The difference between claim 1 of the patent in suit and the disclosure of document (5) was the combination with DBNPA. The problem to be solved was the provision of a process of preservation having, in addition to long-term effects, a short-time effect.

Assuming that the problem was solved over the whole scope, the subject-matter of claim was obvious in view of documents (3) or (1). Document (3) guided the person skilled in the art towards the solution. It disclosed the "quick-kill" character of DBNPA and that its rate of activity was not affected by pH. Furthermore, treatment of an alkaline slurry based on calcium carbonate, i.e. the same system as in the closest prior art, was described. Finally, document (3) suggested the combination of DBNPA with a long acting biocide. The person skilled in the art would thus have combined documents (5) and (3) and arrived at the claimed subject-matter. Alternatively, the person skilled in art would have considered document (1). This document disclosed that mixtures of BNPD and DBNPA had a higher degree of bactericidal activity than each individual ingredient on its own. This system was to be used for processes in pulp and paper production. Based on this knowledge, the person skilled in the art would have used a combination of BNPD and DBNPA to use the ingredients at lower concentrations.

IX. The requests by the parties are as follows.

The appellant requested that the decision under appeal be set aside; the patent be revoked; and documents (9a), (10a) and (11a) be admitted.

The respondent made no requests in appeal.

Reasons for the Decision

1. The appeal is admissible.

2. *Inventive step*

2.1 The patent in suit aims at providing a non-sensitising biocide that combines rapid microorganism decontamination with extended protection from future microorganism insult under alkaline conditions. To this aim, a method based on including an effective amount of a biocidal mixture comprising DBNPA and BNPD in the alkaline medium is disclosed and claimed (patent in suit, paragraphs [0001] and [0008], claim 1).

2.2 The appellant and the decision under appeal rely on document (5) as the closest prior art.

Document (5) relates to Bronopol (INN of BNPD). In an exemplary treatment of a paper mill additive based on calcium carbonate having a pH of 9.5, BNPD is shown to control microorganisms for six weeks at a level of > 20 ppm. The first measurement was made on day 1 (page 6, "Paper Industry Biocides"). Document (5) mentions that BNPD "can also be used in combination with other active ingredients to enhance spectrum and speed of kill" (page 6, first paragraph; see decision under appeal, point 65).

2.3 The difference between claim 1 of the patent in suit and the disclosure of document (5) is thus the addition of DBNPA.

The effect of this difference is a rapid microorganism decontamination in addition to the long acting protection of BNPD.

The problem to be solved is thus the provision of a biocidal method combining rapid decontamination (reduction of microorganism concentration by at least

4 $\log_{10}$ within one hour) with long acting protection.

The problem is considered to be solved in view of the data provided in paragraphs [0024] and [0025] of the patent in suit. Certain combinations of concentrations of DBNPA and BNPD are identified as being synergistic. No synergy is claimed over the whole scope of claim 1.

2.4 It remains to be determined whether the claimed solution is obvious.

The closest prior art points to the possibility of adding a further biocide to enhance the speed of kill. Thus, the person skilled in the art is guided to combine BNPD with a fast acting biocide. When searching for a fast acting biocide, the skilled person would have considered documents aiming at preserving similar compositions as the closest prior art (i.e. alkaline compositions, e.g. based on calcium carbonate, in the field of pulp and paper) or documents suggesting combinations comprising BNPD and further biocides.

The appellant has invoked documents (3) and (1) as leading the person skilled in the art to the claimed solution.

Document (3) focuses on DBNPA. DBNPA is identified as a "quick-kill" biocide, i.e. a biocide that acts instantaneously (page 39, left-hand column, first paragraph). Its rate of activity is not affected by pH (page 38, last paragraph). As an example of alkaline compositions, an alkaline calcium carbonate slurry is discussed (page 40, right-hand column, last paragraph). DBNPA may be used to improve the efficacy of conventional long-term preservatives (page 41, right-hand column, first paragraph).

Document (1) defines bacterial inhibiting compositions comprising BNPD and DBNPA for controlling the growth of *Klebsiella pneumoniae* in a pulping and papermaking system (claims 3 and 6). Synergistic ratios are described in Tables I and II, determined after two hours of incubation.

In view of the teaching of the closest prior art and taking the disclosure of documents (3) or (1) into account, the person skilled in the art would have been guided to use a combination of DBNPA and BNPD for reducing the microorganisms concentration in an alkaline aqueous medium by rapid decontamination and by protecting against future microorganism insult for at least one week.

The remaining open issue is whether a person skilled in the art would have expected the rapid decontamination to be effective in such a way that the microorganism concentration is reduced by at least 4 $\log_{10}$ within one hour. In view of the guidance in documents (3) and (1) given for the amounts of DBNPA to be used, it is considered to be part of the routine tasks of the person skilled in the art to optimise the system to achieve a specific desired decontamination rate. The patent in suit does not identify any particular reason for reaching exactly the decontamination rate of (at least) 4 $\log_{10}$ microorganisms within one hour. Therefore, this rate is seen as not being linked to any purposeful effect. Since it lies within the normal range considered in the field, the person skilled in the art would have arrived at the invention claimed by routine optimisation.

2.5 The subject-matter of claim 1 of the patent in suit does not involve an inventive step (Article 56 EPC).

3. Having come to this conclusion, it is not necessary to discuss any other objections.

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The patent is revoked.

The Registrar: The Chairman:

M. Schalow A. Lindner

Decision electronically authenticated