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D E C I S I O N
of 13 March 2001

Case Number: T 0186/98 - 3.3.5

Application Number: 90311183.9

Publication Number: 0422948

IPC: C02F 1/50

Language of the proceedings: EN

Title of invention:
Use of a water soluble ionene polymer for inhibiting bacterial adhesion and controlling biological fouling in aqueous systems

Patentee:
BUCKMAN LABORATORIES INTERNATIONAL, INC.

Opponent:
W.R. Grace & Co.-Conn.

Headword:
Ionene polymers/BUCKMAN

Relevant legal provisions:
EPC Art. 54(1), 54(3)

Keyword:
"Novelty - no, newly discovered effect in a known use does not confer novelty to the known use"

Decisions cited:
G 0002/88, T 0892/94, T 0706/95, T 0189/95

Catchword:
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Case Number: T 0186/98 - 3.3.5

D E C I S I O N
of the Technical Board of Appeal 3.3.5
of 13 March 2001

Appellant: (Opponent)
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Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted 28 November 1997 concerning maintenance of European patent No. 0 422 948 in amended form.**

Composition of the Board:

Chairman: R. K. Spangenberg
Members: G. J. Wassenaar
M. B. Günzel

Summary of Facts and Submissions

I. The appeal is from the decision of the Opposition Division to maintain European patent No. 0 422 948 in amended form with claims 1 to 13 filed with the letter dated 6 November 1996. Claim 1 thereof reads as follows:

"Use of a water soluble ionene polymer to inhibit the adhesion of bacterial cells to solid surfaces and control biological fouling in aqueous systems without killing the fouling organisms wherein said ionene polymer is added to said aqueous system in an amount of 0.1 ppm to 50 ppm based on the weight of aqueous liquid in the system."

II. The Opposition Division held that the claimed subject-matter was novel with respect to

D2: EP-A-0 354 889,

a document belonging to the state of the art pursuant to Article 54(3) and (4) EPC. It was stated that the teaching of D2 taken as a whole did not make available to the skilled person the teaching that an effective control of biofouling could be achieved by inhibition of adhesion, whereby at the same time the killing of the fouling organisms was avoided.

III. In the statement of the grounds of appeal, the appellant (opponent) attacked the claims as maintained by the Opposition Division on the grounds of unallowable extension (Article 123(2) EPC), insufficient disclosure (Article 83 EPC), lack of novelty (Article 54(1) EPC) and lack of inventive step

(Article 56 EPC). With respect to lack of novelty, inter alia, reference was made to D2.

IV. During oral proceedings, which took place on 13 March 2001, the respondent submitted four sets of claims as auxiliary requests. In claim 1 of the first auxiliary request the upper limit of the amount of ionene polymer to be used is replaced by "10 ppm"; in claim 1 of the second auxiliary request the amount of ionene polymer to be used is from "1 to 10 ppm", and in claim 1 of the third auxiliary request this amount is from "5 to 10 ppm"; the rest of the text of these claims remained unamended. Claim 1 of the fourth auxiliary request read as follows:

"Use of a water soluble ionene polymer to inhibit the adhesion of bacterial cells to solid surfaces and control biological fouling in aqueous systems without killing the fouling organisms wherein said ionene polymer is added to said aqueous system in an amount of 5 ppm to 10 ppm based on the weight of aqueous liquid in the system, and wherein said ionene polymer is derived from a reaction of epichlorohydrin, epibromohydrin or 1,1'-oxybis(2-chloroethane) with N-methylmethanamine or N,N,N',N'-tetramethyl-1,2-ethanediamine."

V. With respect to the novelty objection based on D2, the appellant argued essentially that the only feature not explicitly disclosed in D2 was the use of the ionene polymer without killing the fouling organisms, but that this feature was not clear enough for a proper limitation. Moreover, since the process conditions were the same, the effects must also be the same.

VI. The respondent argued in line with the contested decision that D2 did not disclose the feature of preventing fouling without killing the fouling organisms. From the examples, according to which additionally to the ionene polymer, biocides were used, it was clear that the fouling organisms were killed. With reference to the decision of the Enlarged Board of Appeal G 2/88 (OJ EPO 1990, 93) it was further argued that for novelty of a use claim it was only relevant what was actually made available to the public, not what might have been inherent in what was made available to the public.

VII. The appellant (opponent) requested that the decision under appeal be set aside and that the European patent No. 0 422 948 be revoked.

As main request the respondent (patentee) requested that the appeal be dismissed. As auxiliary requests, the respondent requested that the decision under appeal be set aside and the patent be maintained on the basis of any of auxiliary requests 1 to 4, taken in their numerical order, submitted during the oral proceedings.

Reasons for the Decision

1. The patent in suit concerns the use of a water soluble ionene polymer for inhibiting bacterial adhesion and controlling biological fouling in aqueous systems. The use of polymers derived from a reaction of epichlorohydrin with N-methylmethanamine (dimethylamine) is specifically mentioned and claimed in auxiliary request 4. The use of said polymer for said purpose is disclosed in D2, see page 3, lines 38

to 41 and 55 to 57, page 4, lines 16 to 20 and 42 to 44. D2 further discloses that the polymer can be used in unexpectedly low concentrations (page 3, lines 58 to 61). The concentration can be as low as 0.1 ppm. Preferably the amount is from about 5 ppm (page 7, lines 4 to 13). Thus leaving out of consideration the feature "without killing the fouling organisms", which will be discussed in the following, D2 discloses all features of claims 1 according to all requests. It remains to be decided whether said remaining feature actually confers novelty upon the claimed use.

2. According to the summary of the invention in the patent specification the addition of the ionene polymer in an amount of 0.1 ppm to 50 ppm effectively inhibits the adhesion of the bacterial cells to exposed surfaces without killing the fouling organisms and also without harming non-target organisms (page 3, lines 14 to 18). In the patent specification it is further indicated that while the present polymers are known to be bactericidal at concentrations above certain threshold levels, the inventors have found that they are effective in preventing the adhesion of bacteria even at concentrations substantially below the threshold levels (page 4, lines 5 to 7). For product C, a polymer according to claim 1 of auxiliary request 4, the examples of the patent specification reveal that at a dose of 5 ppm the bacterial growth is only slightly inhibited. On the basis of the examples it was concluded that the fouling organisms were not killed and the total bacterial population was not affected (page 5, lines 19 to 25 and Table 3). From these statements it follows that "without killing the fouling organisms" in the context of the patent in suit means that the polymer is added in a concentration below the

threshold level for substantially affecting the bacterial population including the fouling organisms, or, in other words, the non-killing of the fouling organisms is the mere consequence of adding the polymer in a concentration below said threshold level.

The use of polymers with the same chemical composition as polymer C at the same dose of 5 ppm for reducing or eliminating slime or other microbiological deposits on parts of the equipment has already been disclosed in D2 (page 7, lines 7 to 13 in combination with page 4, lines 42 to 44). It is not stated there that by the said treatment the fouling organisms are killed.

The respondent argued that in D2 the purpose of killing the fouling organisms followed from the contemporary use of biocides. Therefore he concluded the claimed use was different from the use disclosed in D2.

The Board cannot, however, agree with this line of argument. D2 does not require the additional use of biocides. D2 explicitly discloses that an object of the invention is to provide a new method, by which the use of toxic biocides is eliminated or greatly reduced, ie to provide a paper mill deposit control method which is environmentally acceptable (page 3, lines 18 to 19). The use of biocides is only optional (page 2, lines 58 to 61). Moreover, in Table 1 comparative examples are presented showing that the addition of the polymer at certain dosage points has a slime reducing effect in a paper machine, where at the same dosage point (Example B) or at another dosage point (Example C) a biocide is added. The examples reveal that it is not necessary to have a biocide in the shower water tank for reducing the slime built-up.

Therefore, a skilled person would have inferred from the disclosure of D2 that in the absence of additional biocides the fouling organisms are not killed by the use of the ionene polymer.

3. However, even if the non-killing of the fouling organisms were to be regarded as a newly discovered technical effect occurring in the use of the ionene polymers at the low dosage described in D2, this feature would not confer novelty to claims 1 of any of the present requests before the Board, because, as has been explained above, this feature is no more than a further explanation of the phenomena underlying the use of the ionene polymer for controlling biological fouling known from D2. The feature does not imply any technical activity different from the technical activities disclosed in D2 nor does it end up in a new technical application which would not necessarily be correlated with the application or use for controlling biological fouling known from D2 and which could be clearly distinguished therefrom. It has never been alleged by the respondent that non-killing of the fouling organisms could constitute a technical aim on its own to be achieved independently from the control of biological fouling.

As has rightly been stated in decision T 892/94 (OJ EPO 2000, 1, 3.4 et seq. of the Reasons) there is only a new use constituting a novel functional technical feature within the meaning of decision G 2/88 (OJ EPO 1990,93) where the newly discovered technical effect leads to a use of the known substance for a hitherto unknown purpose reflecting said effect (see also the wording of the answer given by the Enlarged Board to question of law iii) (Headnote III) in decision

G 2/88). As has also been confirmed in later decisions there must be a new technical application or use which is not necessarily correlated with the known application or use and can be clearly distinguished therefrom (see e.g. T 892/94, 3.5 of the Reasons, T 233/96 of 4 May 2000, 8.6 et seq. of the Reasons, for a diagnostic use). The mere explanation of an effect obtained when using a known compound for a known purpose cannot confer novelty on a claim, even if the newly discovered technical effect underlying said known use is indicated in the claim (T 706/95 of 22 May 2000, 2.5 of the Reasons, T 189/95 of 29 February 2000, 2.4 of the Reasons).

As the latter is the case here, novelty cannot be attributed on this basis.

4. For these reasons the Board holds that the subject-matter of claims 1 according to all requests lacks novelty over the state of the art as disclosed in D2.

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:

P. Martorana R. Spangenberg