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D E C I S I O N
of 15 October 2002

Case Number: T 0516/99 - 3.3.1

Application Number: 87904340.4

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IPC: C07D 207/267

Language of the proceedings: EN

Title of invention:
Surface active lactams

Patentee:
ISP INVESTMENTS INC.

Opponents:
(1) SYNGENTA PARTICIPATIONS AG
(2) Bayer AG, Leverkusen Konzernverwaltung RP Patente Konzern
(3) BASF Aktiengesellschaft, Ludwigshafen

Headword:
Emulsifiable concentrates/ISP INVESTMENTS

Relevant legal provisions:
EPC Art. 83

Keyword:
"Main and auxiliary request: sufficiency of disclosure (no)"

Decisions cited:
T 0435/91

Catchword:
-



Case Number: T 0516/99 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 15 October 2002

Appellant: ISP INVESTMENTS INC
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Respondents:
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Representative: -

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Representative: -

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 3 March 1999
revoking European patent No. 0 311 632 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: A. J. Nuss

Members: P. P. Bracke
S. C. Perryman

Summary of facts and submissions

- I. The appeal lies from the Opposition Division's decision to revoke European patent No. 0 311 632, since the claims according to the then pending requests did not meet the requirement of Article 123(2) EPC or since the claimed compositions were not inventive.

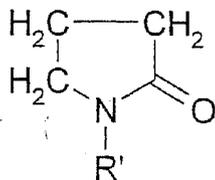
In the decision it was only stated that "the alleged invention is disclosed in the patent in suit". Therefore, the Opposition Division concluded that the requirement of Article 83 EPC was met.

- II. At the oral proceedings before the Board, held on 15 October 2002, the Appellant (Proprietor of the patent) filed a main request and an auxiliary request.

The only claim in the main request read:

"1. An emulsifiable concentrate which forms a sprayable oil-in-water emulsion having dispersed phase droplets in the range of from 0.1 to 5 micrometers upon dilution with water, comprising:

(i) an N-alkyl pyrrolidone surfactant having the formula



where R' is a hydrophobic radical consisting of a linear, branched chain or cyclic alkyl containing from 8 to 14 carbon atoms,

which surfactant is capable of forming micelles in neutral, basic or acid aqueous media or has a critical micelle concentration of between about 1×10^{-3} and about 5×10^{-5} moles per liter,

(ii) a water-insoluble agricultural chemical selected from insecticides, herbicides and fungicides, and

(iii) at least one anionic, nonionic, cationic or amphoteric surfactant other than said N-C₈-C₁₄ alkyl pyrrolidone surfactant,

wherein the weight ratio of said N-C₈-C₁₄ alkyl pyrrolidone surfactant to said other surfactant lies in a range from 1:10 to 1:0.8."

The only claim in the auxiliary request was identical with the claim of the main request, except that the hydrophobic radical R' in the N-alkyl pyrrolidone surfactant was restricted to "a hydrophobic radical consisting of a linear chain alkyl containing from 8 to 14 carbon atoms".

III. The Respondents (Opponents) submitted that the Claim in the main request and the auxiliary request did not meet the requirement of Article 123(2) EPC.

Furthermore, the Respondents contested, that the patent in suit provided sufficient information to enable a skilled person to carry out the invention over its complete claimed scope.

IV. The Appellant argued that the claimed compositions could be directly and unambiguously derived from the

application as filed and that the teachings in the description and in the experimental part of the patent in suit, under the heading "GG. Emulsifiable Concentrate Formulations for Agricultural Chemicals" provided sufficient information in order to fulfill the requirement of Article 83 EPC.

- V. The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request or the auxiliary request both submitted at the oral proceedings on 15 October 2002.

The Respondents requested that the appeal be dismissed.

Reasons for the decision

1. The appeal is admissible.
2. *Article 123(2) and (3) EPC*

The Board is satisfied that the Claim according to the main request and according to the auxiliary request meet the requirements of Article 123(2) and (3) EPC.

Since both requests fail on other grounds, there is no need to give further details for the above finding.

3. *Sufficiency of disclosure of the main request*

According to the established jurisprudence of the Boards of Appeal, the requirement of sufficient disclosure means that the whole subject-matter that is defined in the claims, and not only part of it, must be capable of being carried out by a skilled person without the burden of an undue amount of

experimentation or the application of inventive ingenuity.

Therefore, in the present case, it is essential to establish whether the patent in suit as a whole provides sufficient information in order to enable a person skilled in the art to determine which emulsifiable concentrates form a sprayable oil-in-water emulsion having dispersed phase droplets in the range of from 0.1 to 5 micrometers upon dilution with water, when comprising

(i) an N-alkyl pyrrolidone surfactant capable of forming micelles in neutral, basic or acid aqueous media or has a critical micelle concentration of between about 1×10^{-3} and about 5×10^{-5} moles per liter,

(ii) a water-insoluble agricultural chemical and

(iii) at least one anionic, nonionic, cationic or amphoteric surfactant other than said N-C₈-C₁₄ alkyl pyrrolidone surfactant, wherein the weight ratio of said N-C₈-C₁₄ alkyl pyrrolidone surfactant to said other surfactant lies in a range from 1:10 to 1:0.8.

3.1 The claimed emulsifiable concentrates are not only defined by the fact that they comprise a certain N-alkyl pyrrolidone surfactant, a water-insoluble agricultural chemical and a surfactant other than said N-alkyl pyrrolidone within specific ratios; they are further defined by the requirement in the claim that the concentrate forms a sprayable oil-in-water emulsion having dispersed phase droplets in the range from 0.1 to 5 micrometers upon dilution with water, which

amounts to a further restriction on the concentrate by reference to a functional test they must be able to pass. What strikes is that the reader is given neither in the claim nor in the description any relevant information as to what sort of concentrates he should test as

- (1) the extent of dilution is not stated;
- (2) what to choose as ingredients (ii) and (iii) out of an extremely wide possible range is left open;
- (3) even concerning ingredient (i) the reader would be left with doing numerous tests at different pH to be sure whether a structurally suitable N-alkyl pyrrolidone met the micelle forming requirement or not;
- (4) the ratio of ingredients (i):(ii):(iii), is left to the reader.

Unless virtually everything meeting the compositional requirements of the claim should also meet the functional requirements of the claim, a serious question arises whether the skilled person has been given sufficient information to carry out the invention.

According to the established jurisprudence of the Boards of Appeal, such a functionally defined feature is only acceptable if it enables a skilled person to carry out the invention in the light of the disclosure of the patent in suit and, possibly, on the basis of common general knowledge (see T 435/91 OJ EPO 1995, 188).

The Appellant admitted that the description of the patent in suit did not give any information about the formation of sprayable oil-in-water emulsions upon dilution in water. Nevertheless, he submitted that by the examples in the experimental part under the heading "GG. Emulsifiable Concentrate Formulations for Agricultural Chemicals" and by using common general knowledge a skilled person would have sufficient information to find out which concentrates would form sprayable oil-in-water emulsions according to the Claim.

The 16 examples under the heading "GG. Emulsifiable Concentrate Formulations for Agricultural Chemicals" only describe specific concentrates, of which it is said that they provide stable emulsions or fast breaking emulsions. According to the majority of the examples the presence of an organic solvent in the concentrates is required (ie (i) Examples 1 to 5, (ii) Examples 2 to 7 and (iii) Examples 2 to 4), which requirement may not be deduced from the description, and according to some other examples the presence of an N-alkyl pyrrolidone is not even required (see (ii) Examples 3, 4, 6 and 7), contrary to the definition of the concentrate in the present Claim. Moreover, also the experimental part does not provide any guidance as to how to prepare those oil-in-water emulsions claimed and, thus, leaves the burden of finding out how such oil-in-water emulsions may be prepared entirely upon the skilled reader. In view of that the Board considers that the person skilled in the art would have to find out merely by trial and error as to which, if any, concentrates meet the functional requirement set out in the Claim, ie by proceeding on a lottery basis or by making own investigations without the shadow of any useful technical guidance, ie by performing a research programm.

Consequently, the Board concludes that there is no technical concept fit for generalisation in the patent in suit relating to the invention now claimed, which would make available to the skilled person the host of concentrates forming a sprayable oil-in-water emulsion according to the Claim. There is also no evidence that a skilled person could make such concentrates on the basis of common general knowledge.

- 3.2 The Appellant also admitted that it was not specified in the patent in suit which agricultural chemicals were to be considered as water-insoluble. However, he submitted that the term "water-insoluble agricultural chemical" would be understood by a skilled person as an agricultural chemical insufficiently soluble in water to make it usable agriculturally without prior modifications to increase its solubility. This contention is unsupported by any reference to documents showing what is standard usage in this art. It is also inherently implausible and so does not convince the Board. The lack of a verifiable objective criterion or parameter for determining whether an agricultural chemical is water-insoluble in the sense of the patent in suit cannot be validly cured in the way suggested by the Appellant as the skilled person is given no more helpful guidance for trying to find out whether a particular agricultural chemical is water-insoluble in the sense now suggested by the Appellant or not. The Board does not see any improvement in definition. If the skilled person cannot determine what is "water-insoluble", he is even less able to determine what is "insufficiently soluble in water".

The only information provided in the experimental part under the heading "GG. Emulsifiable Concentrate Formulations for Agricultural Chemicals" is that the few

specific agricultural chemicals used in the examples are to be considered as "water-insoluble" in the sense of the patent in suit without however any discussion which might give guidance on why that definition is met. It remains that these examples do not provide any teaching helpful for finding other agricultural chemicals which would be "water-insoluble". Indeed, as the Respondents submitted that the solubility of those agricultural chemicals in water differed by a factor 10^4 , which was not contested by the Appellant, a skilled reader could conclude therefrom that the term "water-insoluble agricultural chemical" does not necessarily exclude agricultural chemicals having some solubility in water.

In the absence of (a) any information, which agricultural chemicals are considered to be insufficiently soluble in water for agricultural use and (b) any indication about the maximum solubility in water of suitable agricultural chemicals in the sense of the patent in suit, a skilled reader cannot determine which of these are suitable for incorporation in the claimed concentrates.

- 3.3 The Appellant also admitted that all N-alkyl pyrrolidone surfactants having a critical micelle concentration of between about 1×10^{-3} and about 5×10^{-5} moles per liter also fulfill the requirement of being capable of forming micelles in neutral, basic or acid aqueous media, so only this latter is a restriction. Thus it remains to be decided whether the patent in suit provides sufficient information to determine in an unambiguous way which N-alkyl pyrrolidone surfactants are capable of forming micelles in neutral, basic or acid aqueous media, a prerequisite for the skilled person to be able to carry out the invention as claimed.

The only information in the patent in suit in this respect may be found in Table 2 in the experimental part of the patent in suit, wherein the critical micelle concentrations for N-n-decyl pyrrolidone, N-n-dodecyl pyrrolidone and N-n-tetradecyl pyrrolidone are listed. Therefrom it can be concluded that those pyrrolidones are capable of forming micelles.

Although no critical micelle concentration was given in that Table 2 for N-n-octyl pyrrolidone, the Appellant submitted that N-n-octyl pyrrolidone requires an extremely strong acid medium to form micelles in water and that it would not be beyond the average skilled person to work this out and to realise that such a pyrrolidone would still fall within the definition used in the claims of the disputed patent (see letter of 24 October 1997, page 3, fourth paragraph).

However, in the present case, the patent in suit does not disclose which N-alkyl pyrrolidones are capable of forming micelles in which neutral, basic or acid aqueous media; it does not give any information about the chemical nature of the neutral, basic or acid aqueous media to be used. Therefore, the patent gives insufficient useful technical guidance as to how to find out, with a reasonable expectation of success, which N-alkyl pyrrolidones are capable of forming micelles in neutral, basic or acid aqueous media.

3.4 The Board thus comes to the conclusion that for the three reasons given under points 3.1, 3.2 and 3.3 the patent in suit does not provide sufficient information to enable a skilled person to carry out the invention.

4. *Sufficiency of disclosure of the auxiliary request*

The Appellant submitted that all N-alkyl pyrrolidones wherein R' is a linear chain alkyl containing from 8 to 14 carbon atoms are capable of forming micelles in neutral, basic or acid aqueous media. By restricting the Claim to sprayable concentrates comprising such N-linear alkyl pyrrolidones, a skilled person would thus have sufficient information to determine which N-alkyl pyrrolidones are suitable.

However, even by assuming that a skilled person would have sufficient information concerning the limited group of N-alkyl pyrrolidone surfactants, only one reason why the Board considers that the disclosure is not sufficient is thereby removed. Nevertheless, the requirement of sufficiency of disclosure is still not fulfilled for the reasons set out in points 3.1 and 3.2 above.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

N. Maslin

A. Nuss