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D E C I S I O N
of 2 September 2003

Case Number: W 0014/02 - 3.3.5

Application Number: PCT/GB 01/02622 (01938440.3)

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Title of invention:
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Applicant:
Syngenta Limited

Headword:
Extraction/SYNGENTA

Relevant legal provisions:
PCT Art. 17(3)(a)
PCT R. 13(1), 13(2), 40(1), 40(2)

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G 0002/89, W 0003/93, W 0016/00

Catchword:
-



Case Number: W 0014/02 - 3.3.5

D E C I S I O N
of the Technical Board of Appeal 3.3.5
of 2 September 2003

Applicant: Syngenta Limited
Fernhurst
Haslemere
Surrey GU27 3JE (GB)

Representative: Houghton, Malcolm John
Intellectual Property Department
Syngenta Limited
PO Box 3538

Jealotts Bill Research Centre
Bracknell
RG42 6YA (GB)

Decision under appeal: Protest according to Rule 40.2(c) of the Patent Cooperation Treaty made by the applicants against the invitation (payment of additional fees) of the European Patent Office (International Searching Authority) dated 31 October 2001.

Composition of the Board:

Chairman: R. Spangenberg
Members: M. Eberhard
B. Günzel

Summary of Facts and Submissions

- I. International patent application PCT/GB01/02622 was filed with eleven claims including two independent claims.
- II. The European Patent Office (EPO), acting as an International Searching Authority (ISA), informed the applicant that the international application did not comply with the requirement of unity of invention set out in Rule 13 PCT and invited the applicant to pay additional fees in accordance with Article 17(3)(a) and Rule 40.1 PCT. In the invitation to pay seven additional search fees, reference was made to the three following documents:

D1: JP-A-60084194 & WPI/Derwent 1985-150613

D2: SU-A-1786018 & WPI/Derwent 1994-0033099

D3: Russian Journal of Applied Chemistry, Vol. 71, No. 3, 1998, pages 532-534, Ya.I. Korenmann et al.,

and it was pointed out that the application related to nine groups of inventions, namely:

1. Claims 1 to 11 (all in part): Process for extracting from an aqueous solution the alkali metal or ammonium salt of a phenol with a partially water-miscible organic solvent

2. Claims 1 to 9, 11 (all in part): Process for extracting from an aqueous solution the alkali metal or ammonium salt of a thiophenol with a partially water-miscible organic solvent
3. Claims 1 to 9, 11 (all in part): Process for extracting from an aqueous solution the alkali metal or ammonium salt of a naphthol with a partially water-miscible organic solvent
4. Claims 1 to 9, 11 (all in part): Process for extracting from an aqueous solution the alkali metal or ammonium salt of an anthrol with a partially water-miscible organic solvent
5. Claims 1 to 9, 11 (all in part): Process for extracting from an aqueous solution the alkali-metal or ammonium salt of a phenanthrol with a partially miscible organic solvent
6. Claims 1 to 9, 11 (all in part): Process for extracting from an aqueous solution the alkali metal or ammonium salt of a thionaphthol with a partially water-miscible organic solvent
7. Claims 1 to 9, 11 (all in part): Process for extracting from an aqueous solution the alkali metal or ammonium salt of a thioanthrol with a partially water-miscible organic solvent
8. Claims 1 to 9, 11 (all in part): Process for extracting from an aqueous solution the alkali metal or ammonium salt of a thiophenanthrol with a partially-miscible organic solvent

9. Claims 10, 11 (all in part): Process for extracting from an aqueous solution the alkali metal or ammonium salt of 3-benzotrifluoride with a cycloalkanone.

No additional search fee was required for the subject-matter of group 2 since the search for the subject-matters of groups 1 and 2 could be carried out without extra effort (see points 3 and 5 of the invitation). The reasons given in the invitation may be summarised as follows:

The common technical feature between the two independent claims 1 and 10 (or between groups 1-8 and group 9) was the extraction of an alkali metal salt composed of a benzene ring with a partially water-miscible solvent. However this feature was known from D1. Therefore these claims (or these groups) contained "no common" or "corresponding" special new and inventive technical features, as required by Rule 13.2 PCT. Furthermore, the common problem linking these claims (or groups) was entirely solved by the process of D1. Therefore, no common problem between these claims (or groups) could be recognised. Concerning the various alternatives in claim 1, unity existed if the three conditions stated in the Administrative Instructions under the PCT (as in force from July 1, 1998), Annex B, part 1(f) were fulfilled. Conditions (2) and (3) were not fulfilled since the common structure shared by some of the alternative processes, namely the phenol ring, was known from D2 or D3. Some other alternative processes seemed to share the thiophenol ring as the common structure. This common

structure was, however, known from D1 so that conditions (2) and (3) were also not met for these alternatives. The common problem linking the alternatives within claims 1 and 6, ie extracting a substance being composed of 1, 2 or 3 benzene rings of which one was substituted by an -XH group with a partially water miscible solvent, was entirely solved by the novelty destroying document D2. Thus no common problem could be recognised for these alternatives.

III. The applicant paid seven additional search fees under protest in accordance with Rule 40.2(c) PCT and filed a reasoned statement contesting the alleged lack of novelty with respect to D1, D2 and D3. The applicant argued *inter alia* that "the extraction of an alkali metal salt composed of a benzene ring with a partially water-miscible solvent" was not known from D1. None of D1, D2 and D3 disclosed the common structure possessed by the alternatives of claim 1 in relation to the extraction process. In D2 and D3, free phenol and not its metal or ammonium salt was extracted. Thus neither D2 nor D3 disclosed the claimed extraction process.

IV. A review board in accordance with Rule 40.2(c) PCT confirmed the lack of unity of invention and invited the applicant to pay a "protest fee" (Rule 40.2(e) PCT). The review board argued that the solvents in D1, although being difficultly soluble in water, were also partially water miscible. The applicant's view that the common structure, ie the phenol ring, was not known from D2 and D3 could not be agreed with because in these documents the phenol compound was present either as an ammonium salt (D2) or as an alkali metal salt (D3). With respect to the thiophenol ring seen as

common structure for other alternatives of claim 1, D1 did disclose an extraction process for a thiophenol compound and thus the said common structure was known from D1. The common technical feature between groups 1-8 and 9 was known from D1. D1 disclosed an extraction process for an alkali metal salt composed of a benzene ring, eg phenol in an alkali metal bisulphide liquor, and the use of a partially water-miscible solvent, eg a ketone.

- V. In reply thereto the applicant paid the protest fee and pointed out that it wished to have its protest examined further.

Reasons for the Decision

1. The protest complies with the requirements of Rule 40.2(c) and (e) PCT and is therefore admissible. The applicant's submissions in the "reasoned statement" and in point V above imply that the applicant wishes to have all additional search fees reimbursed.

2. The international application was considered to lack unity of invention on an "a posteriori basis", ie after an assessment of the claims with regard to novelty and/or inventive step in relation to the prior art. In the case of an "a posteriori" lack of unity it should be examined after it has been shown that there is a lack of novelty or inventive step in a main claim whether there is a technical relationship among the remaining inventions involving one or more of the same or corresponding special technical features (see G 2/89, OJ EPO, 1991, 166, points 4 and 5 of the reasons; PCT

Search Guidelines as in force from 18 September 1998, Chapter VII, item 9; Rule 13.2 PCT; W 16/00 dated 20 September 2000, point 3 of the reasons). The ISA relied on the prior art documents D1, D2, D3.

3. According to point 1 of the invitation, which relates to the lack of unity between the processes of independent claims 1 and 10, the common technical feature between these two independent claims was the extraction of an alkali metal salt composed of a benzene ring with a partially water-miscible solvent. This feature would, however, be known from D1 in which the phenols and/or thiophenols were extracted from an alkali metal bisulphide liquor. It was assumed that at least part of the phenols and/or thiophenols was present as an alkali salt and concluded that no "common" or "corresponding" new and inventive technical feature was present in independent claims 1 and 10. The ISA further considered that the common problem linking the two independent claims, ie extracting an alkali metal salt composed of a benzene ring with a partially water miscible solvent, was entirely solved by D1 so that no common problem could be recognised which could serve as the single general inventive concept required by Rule 13.1 PCT .

Concerning claim 10 the board first wishes to point out that it is not clear which compound the name "3-benzotrifluoride" indicated in claim 10 actually represents. However, in view of the description and of claim 8 which disclose the compound 3-hydroxybenzotrifluoride, it is assumed that claim 1 contains a mistake and that the compound "3-hydroxybenzotrifluoride" is meant (see description

page 2, lines 18 to 28; page 3, lines 7 and 18 to 19;
page 5, line 1; example 1; claim 8).

D1 discloses adding a hardly water soluble or insoluble solvent such as a ketone, an alcohol, ether, or ester, or mixture thereof to the alkali hydrosulphide solution or the reaction system of the alkali hydrosulphide solution formed in a petroleum relating factory. The solvent is dispersed throughout the solution to be treated by a stirring means to perform the extractive removal of a minute amount of the acidic oil component dissolved in the alkali hydrosulphide solution. By this method, which permits to obtain an alkali hydrosulphide solution without bad odour, not only mercaptans but also thioethers can be removed almost perfectly. It is not indicated in D1 that phenols and/or thiophenols are present in the alkali hydrosulphide solution which is treated by the solvent. No reasons are given in the invitation in support of the assumption that phenols and/or thiophenols are **necessarily** present in the hydrosulphide solution. Even if it were considered that a small amount of a phenol is present therein and that part of the phenol is in the form of the alkali salt, the question would still arise whether the phenol or the alkali salt thereof is extracted by the water-insoluble or the hardly water soluble solvent since D1 is completely silent in this respect. Therefore, the board has considerable doubts that it can be concluded merely on the basis of the short abstract in D1 that this document discloses "the extraction of an alkali metal salt composed of a benzene ring with a partially water-miscible solvent". A translation of the corresponding Japanese patent application might lead to a different conclusion, however the ISA seems to have

relied only on the Abstract D1. It follows from the above that the considerations with respect to the disclosure of D1 in point 1 of the invitation and the conclusions based thereon cannot be followed by the board.

4. The preceding observations apply likewise to the considerations in point 3 of the invitation where the ISA dealt with the lack of unity of invention between groups 1-8 and group 9 and in which the reasons given in point 1 in connection with claims 1 and 10 were repeated or referred to.

5. In point 2 of the invitation, the ISA examined the question of unity of invention between the alternative extraction processes included in claim 1 and made reference to three conditions set out in the Administrative Instructions under the PCT (as in force from July, 1998) Annex B, part 1(f) which should be met for the requirement of unity between alternatives to be met. Condition (3) indicated in the invitation reads as follows: "in relation to the extraction process, the alternatives must be novel. If it can be shown that one alternative is not novel over the prior art, the question of unity has to be reconsidered by the examiner". The ISA considered this condition not to be fulfilled: see page 4 of the invitation, 3rd paragraph. In this paragraph it was argued that "Some of the alternatives (phenol, naphtol, anthrol, phenanthrol) mentioned in the assembly I combined with III or IV seem to share a common structure, namely the phenol ring. However this common structure was known from D2 and D3".

5.1 It would appear from the content of this paragraph and from the statement in point 2.2 of the invitation that D2 was considered to destroy the novelty of one of the alternative processes defined in claim 1. However the applicant disputed that D2 disclosed the extraction process as defined in claim 1 and the board is not convinced in view of the reasons given in the invitation of the ISA that D2 is actually novelty destroying.

D2 discloses the extraction of **phenol** with methylethyl ketone in the presence of ammonium sulphates as salting agent at a concentration of 35.5-43 wt% in the aqueous phase. The method is suitable for water having a phenol concentration within 0.005-1 mg/l. The process comprises saturating a phenol-containing water with ammonium sulphate, adding methylethyl ketone (1 ml per 100 ml of water) and extracting for 10 min. in a vibromixer. The aqueous and organic phases are then separated. The method results in practically full removal of **phenol** (93-95%). According to all the alternatives of claim 1 of the international application, the starting aqueous solution is **an alkaline or neutral solution**, and the **alkali metal salt or the ammonium salt of the phenol** (naphthol, anthrol or phenanthrol, or their corresponding thiols) **is extracted**. Furthermore, according to claim 1 the ratio of solvent to water in the separated solvent phase is from 0.5:1 to 10:1 w/w. It is not indicated in D2 that ammonium phenolate is extracted by methylethyl ketone; according to D2 phenol is extracted. Furthermore, D2 does not teach that the starting solution is alkaline or neutral. The ratio of solvent to water in the separated solvent phase as defined in claim 1 is also

not indicated in D2. The invitation of the ISA contains no reasons as to why these features were considered to be disclosed in D2. From the fact that part of the phenol might be present in the form of an ammonium salt in the solution to be treated, it cannot be directly and unambiguously derived that the ammonium salt of phenol was extracted, especially since D2 states that phenol is extracted.

5.2 In connection with D3, it is not clear to the board whether or not, in the said 3rd paragraph on page 4 of the invitation (see point 5 above), D3 was considered to destroy the novelty of one of the alternative processes defined in claim 1. A phenol ring is indeed disclosed in D3 since this document concerns the extraction of phenol with cyclohexanone from aqueous salt solutions; however it cannot be deduced therefrom that one of the alternative processes of claim 1 lacks novelty over the disclosure of D3. If D3 were considered to destroy the novelty of claim 1 by the ISA, then the invitation does not contain the reasons on which this opinion was based, contrary to the requirement in the PCT Search Guidelines cited in point 2 above, Chapter VII, item 9, second sentence. The board wishes to observe in this context that, as pointed out by the applicant in the reasoned statement, **phenol is extracted** with cyclohexanone in the process of D3. D3 does not indicate that the alkali salt of phenol is extracted and also does not disclose the ratio of solvent to water stated in claim 1.

5.3 On page 4 of the invitation, fourth paragraph, it is further indicated that "Some other alternative processes defined by the elements (thiophenol,

thionaphtol, thioanthrol, thiophenanthrol) of the assembly II combined with III or IV, seem to share the common structure, namely the thiophenol ring; however this common structure is known from D1." It was concluded that condition (3) was not fulfilled. In the board's view this conclusion would seem to imply that D1 was considered to destroy the novelty of one of these alternatives. However, as indicated above in point 3, the invitation gives no reason in support of its assumption that the hydrosulphide solution necessarily contains thiophenols. Furthermore D1 does not disclose that the alkali salt of the thiophenol would be extracted by the water-insoluble or hardly water soluble solvent. Therefore, the arguments of the ISA in this fourth paragraph are also not convincing.

- 5.4 It follows from the above that the opinion given in the invitation of the ISA as regards the lack of novelty of at least one of the alternative processes of claim 1 (condition (3) stated in the invitation) is based on reasons which cannot be followed by the board. Therefore it cannot be concluded that the alternative processes as defined in the claims of the international applications lack unity of invention "a posteriori" as a result of a lack of novelty with respect to D1, D2 or D3.

The board cannot investigate ex officio whether an objection of lack of unity would have been justified for reasons other than those given (see W 3/93, OJ EPO, 1994, 931). Therefore the applicant's protest is justified on the basis of the preceding conclusions.

6. The board wishes to point out that these conclusions do not exclude that an objection of lack of unity of invention could be raised again during the further prosecution of the application on the basis of different grounds.

Order

For these reasons, it is decided that:

Reimbursement of the seven additional search fees and of the protest fee is ordered.

The Registrar:

The Chairman:

U. Bultmann

R. Spangenberg