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DECISION
of 16 December 2003

Case Number: T 0268/00 - 3.3.1

Application Number: 96926473.8

Publication Number: 0851853

IPC: C07C 201/16

Language of the proceedings: EN

Title of invention:

Process for the purification of diphenyl ether compounds

Applicant:

Syngenta Limited

Opponent:

-

Headword:

Purification/SYNGENTA

Relevant legal provisions:

EPC Art. 56, 123(2)

EPC R. 67

Keyword:

"Amendments - allowable"

"Inventive step (no) - purported effects not within whole area claimed - reformulation of problem - alternative - arbitrary modification"

"Reimbursement appeal fee (no) - no procedural violation"

Decisions cited:

T 0002/81, T 0939/92

Catchword:

-



Case Number: T 0268/00 - 3.3.1

DECISION
of the Technical Board of Appeal 3.3.1
of 16 December 2003

Appellant:

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Representative:

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Decision under appeal:

Decision of the Examining Division of the
European Patent Office posted 9 November 1999
refusing European application No. 96926473.8
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: A. J. Nuss
Members: R. Freimuth
R. T. Menapace

Summary of Facts and Submissions

I. The appeal lodged on 9 December 1999 lies from the decision of the Examining Division posted on 9 November 1999 refusing European patent application No. 96 926 473.8 (European publication No. 851 853) which was filed as international application published as WO-A-97/10200.

II. The decision of the Examining Division was based on claims 1 to 15 filed on 29 July 1997 according to the then pending request. The Examining Division held that the subject-matter claimed was not inventive in view of document

(8) US-A-5 446 197,

thus contravening Article 56 EPC.

The Examining Division held that document (1) represented the closest prior art disclosing a method for purifying acifluorfen to remove in particular the 2'-nitro isomer. The process according to the present application aimed also at a high degree of purity removing particularly that isomer. As the examples showed no improvement with respect to purity when compared with the process of document (1) the technical problem underlying the invention could only be seen in providing an alternative purification process. That problem had been successfully solved by indicating the hold time after crystallisation. This hold time having no beneficial effect, it was considered that the optimal hold time could be determined by the skilled person through routine experimentation without

inventive skill. Therefore the claimed subject-matter did not involve an inventive step.

III. In a communication pursuant to Article 11(2) of the rules of procedure of the Boards of Appeal annexed to the summons for oral proceedings, the Board indicated that the subject-matter claimed appeared to lack novelty and that there were serious doubts as to the inventive step of a subject-matter delimited from the prior art.

IV. The Appellant submitted at the oral proceedings before the Board held on 16 December 2003 a fresh main and auxiliary request. Independent claim 1 of the main request read as follows:

"1. A process for the purification of acifluorfen (5-(2-chloro- α,α,α -trifluoro-4-tolyloxy)-2'-nitrobenzoic acid) or a salt thereof from a mixture containing acifluorfen together with one or more isomers or dinitrated analogues thereof; the process comprising dissolving the mixture in a suitable crystallisation solvent and recrystallising the product from the resulting crystallisation solution; characterised in that the crystallisation solution contains not more than 25% loading of acifluorfen wherein loading is defined as:

$$\frac{\text{weight of pure acifluorfen} \times 100}{\text{weight of pure acifluorfen} + \text{weight of solvent}}$$

the temperature to which the solution is cooled for crystallisation is not greater than about 30°C, the crystallisation solvent is a xylene or a mixture of

xylenes and after achieving crystallisation temperature, the mixture is held for from 1 to no more than four hours before separation of the acifluorfen."

Claim 1 according to the auxiliary request differs from claim 1 according to the main request exclusively in limiting the loading to not more than "15-20%".

V. The Appellant argued in respect of novelty that document (1) did not disclose a hold time of 1 to 4 hours now included in claim 1 according to either request.

With respect to inventive step the Appellant started from document (1) as the closest prior art. Vis-à-vis the process described therein the problem to be solved was the provision of an improved process producing acifluorfen on industrial scale in higher yields, in greater purity and in a more efficient way wherein purity was defined as removal of (substantially) all 2'-nitro isomer (application page 6, line 13). In support thereof he filed on 5 June 2003 a test report in form of a table and a graph which was identical to the report filed in the examination proceedings on 14 June 1999. That test report addressed the improvement in yield and in purity depending on the hold time. The claimed process allowed a higher loading than the prior art which was more efficient and it could be operated on an industrial scale while the process of document (1) addressed merely the laboratory scale. Due to these unexpected improvements the claimed invention was unobvious and involved an inventive step.

The Appellant provided furthermore a declaration of Mr Davey dealing with arguments of the decision under appeal.

Since the Appellant was forced to appeal an unsound decision based on errors he had no chance to rebut, he deserved a refund of the appeal fee.

VI. The Appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of either claims 1 to 14 (main request) or claims 1 to 13 (auxiliary request) submitted during the oral proceedings, and that the appeal fee be reimbursed.

VII. At the oral proceedings the decision of the Board was announced.

Reasons for the Decision

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

The limitation of claim 1 of either request to acifluorfen finds support in original claim 15. The use of xylenes or mixture of xylenes as crystallisation solvent is disclosed on page 7, lines 24 and 25 of the application as filed. Claim 1 specifies a hold time of one to no more than four hours after achieving crystallization temperature. Page 8, lines 9 to 11 of the application as filed indicates a general range of no more than four hours and a preferred range of one to two hours included in that general range. Both

endpoints of the claimed range of one and four hours being specifically named in the application as filed, this amendment does not generate any new subject-matter within the meaning of Article 123(2) EPC (see decision T 2/81, OJ EPO 1982, 394, point 3 of the reasons). The particular range of 15-20% loading in claim 1 according to the auxiliary request is based on original page 7, line 29.

For these reasons the Board concludes that claim 1 according to either request meets the requirements of Article 123(2) EPC.

3. *Novelty*

Claim 1 according to the main and the auxiliary request has been amended to indicate in the characterising portion a hold one to four hours after achieving crystallisation temperature. As this feature is not disclosed in document (1) the subject-matter claimed is not anticipated and novelty established.

4. *Inventive step*

4.1 Independent claim 1 of the auxiliary request is directed to a preferred embodiment, namely to a loading of 15-20%, within the ambit of claim 1 according to the main request which indicates the broader range of not more than 25% (cf. point IV above). Thus, the subject-matter claimed in the auxiliary request is covered by that of claim 1 of the main request. In case the embodiment according to the auxiliary request lacked inventive step, such a chain of requests would mandatorily lead to the conclusion that the preceding

main request, which encompasses that obvious embodiment, in its entirety, involves an inventive step neither. For this reason, it is appropriate that the auxiliary request, in particular the subject-matter of claim 1 thereof, is examined first as to its inventive ingenuity.

- 4.2 Claim 1 according to the auxiliary request is directed to a process for purification of acifluorfen by recrystallisation of the crude product.

A similar process already belongs to the state of the art in that document (1) describes a process for the purification of acifluorfen. This process starts from a crude acifluorfen containing isomers, in particular the 2'-nitro isomer, and di-nitrated analogues thereof (column 3, lines 20 to 27). That crude acifluorfen comprising 61,3 weight% of the pure product (example 1, column 6, line 27) is solved in xylenes (column 3, line 43; column 4, line 57; examples 1 and 2) at a loading thereof of up to 30 weight% (column 3, lines 45; example 2). That means a loading of 18,4% pure acifluorfen in terms of the formula given in present claim 1 which is within the claimed range. The solution is cooled to a temperature for crystallisation of 0 to 30°C (column 5, lines 35 and 36; examples 1 and 2). In the examples after cooling to 30°C the mixture was filtered (column 6, lines 45 and 46 in combination with column 7, lines 25 and 26). That teaching discloses to execute the filtering step once the cooling temperature of 30°C is achieved, i.e. in the absence of any hold time. The Appellant acknowledged this finding in his Statement of the Grounds of Appeal, page 3, paragraph 4,

line 5, that document (1) referred to an operation "without a hold time".

The Appellant argued at the oral proceedings before the Board that document (1) according to column 4, line 31 and column 5, line 5 was directed to a purification process on a laboratory scale only, while the claimed process could operate on an industrial scale. However, the teaching of that prior document is not confined by those statements to a process on a laboratory scale only as claim 1 thereof does not comprise any feature limiting the scale of the described process.

Furthermore, the description of document (1) indicates that "the weight of the crude wet cake may vary according to the user requirements" (column 4, lines 29 and 30), thereby making clear that the described process operates at any scale.

For these reasons, the Board considers, in agreement with the Appellant and the Examining Division, that the disclosure of document (1) specified above represents the closest state of the art, and, hence, the starting point in the assessment of inventive step.

- 4.3 In view of this state of the art the problem underlying the invention as submitted by the Appellant is the provision of an improved process producing acifluorfen on an industrial scale and in a more efficient way in higher yields and in greater purity. The purity is defined as "removal of (substantially) all 2'-nitro isomer" which is of "critical importance" (application page 6, line 13; page 24, line 9).

- 4.4 The present application proposes as the solution to this problem the process of claim 1 which is characterised by a hold time of 1 to not more than four hours.
- 4.5 However, an industrial scale process is already embraced by the closest document (1) which is not confined to a laboratory scale (cf. point 4.2 above). Therefore the provision of an industrial scale process does not constitute an improvement vis-à-vis that document and therefore it cannot form part of the problem to be solved.

To support his allegation that the process of claim 1 successfully achieves the purported improvements in terms of yield, purity and efficiency, the Appellant referred to the test report "Appendix I" submitted on 5 June 2003 which was identical to the report filed in examination proceedings on 14 June 1999. That test report indicates the results in yield and 2'-nitro isomer content (=purity) depending on the hold time for one particular operation of the claimed process, namely the operation in ortho-xylene at a loading of 15% and a crystallisation temperature of 0-5°C. In the absence of any hold time, reflecting the process of the closest document (1), the test report discloses a yield of 59,7% and 0% 2'-nitro isomer content in the purified acifluorfen, while a yield of 68,9% and 1,61% 2'-nitro isomer content is achieved after a hold time of 2,5 hours.

That test report is not only silent on the results at a hold time of four hours which is still within the claimed range; moreover it indicates exclusively the

result of a sole operating embodiment of the claimed process thereby covering only a very narrow sector of the claimed invention. At the oral proceedings before the Board, the Appellant stated in support of inventive step that the particular operation of the claimed process was critical vis-à-vis the results achieved, small variations in the particular operation entailing substantially different results. The Appellant's statement is in line with the finding of the present application on page 25, line 23 to 26 addressing the results following the variation of filtration temperature and solvent that only the use of ortho-xylene as solvent results in the purported increase in purity from 2'-nitro isomer. However, claim 1 is not restricted to the use of that particular solvent but covers the use of any xylene or mixture thereof.

Therefore, there are serious doubts as to whether the process of claim 1 indeed achieves the alleged improvements as to yield, purity and efficiency within the whole area claimed. These doubts become a certainty when looking at experiment 91 of the application which is within the ambit of claim 1. That experiment starts from a crude acifluorfen having a 2'-nitro isomer content of 7-9% and results in a "purified" acifluorfen having a content thereof of 9,4%. The content of the critical impurity 2'-nitro isomer being higher after operating the claimed purification process than at the start demonstrates that this particular operating embodiment, though within claim 1, does not successfully work at all showing no purifying effect.

The technical problem indicated in point 4.3 above of improving yield, purity and efficiency could only be taken into account in the assessment of inventive step if it could be accepted as having been successfully solved if it would be credible that within the whole area claimed the purification process achieves that improvement (see decision T 939/92, OJ EPO 1996, 309, points 2.5.4 and 2.6 of the reasons). However, since not substantially all claimed operating embodiments exhibit an improvement, the conclusion must be drawn that the invention as broadly defined in claim 1 does not provide a solution to the technical problem as identified above, with the consequence that the alleged improvement in yield, purity and efficiency is to be disregarded in the determination of the objective problem underlying the invention, and thus in the assessment of inventive step.

For these reasons the objective problem underlying the application vis-à-vis the closest document (1) is a less ambitious one, namely of providing a further process for the purification of acifluorfen.

4.6 Finally, it remains to be decided whether or not the proposed solution to the objective problem underlying the patent in suit as defined above is obvious in view of the state of the art.

The process for the purification of acifluorfen according to claim 1 differs from that described in the closest document (1) merely in that the hold time after achieving crystallisation temperature is one to four hours before separation of the acifluorfen, while in the state of the art the separation occurs once the

crystallisation temperature is reached (cf. point 4.2 above). The Appellant alleged that this particular process feature was essential for achieving improvements in yield, purity and efficiency. However, those purported improvements are not successfully achieved within the whole area of process claim 1 as outlined in point 4.5 above in detail. Thus, not being causal to any particular effect achieved within the whole ambit of claim 1, the process feature of a hold time of one to four hours is neither critical nor purposive for solving the objective problem underlying the application. The act of picking out at random any numerical time range is within the routine of the skilled person faced with the mere objective problem of providing an alternative process and cannot provide the claimed process with any inventive ingenuity.

- 4.7 For these reasons, the solution proposed in claim 1 to solve the objective problem underlying the application is obvious vis-à-vis the prior art.
5. As a result, the Appellant's auxiliary request is not allowable for lack of inventive step pursuant to Article 56 EPC.
6. The main request covers the subject-matter of claim 1 of the auxiliary request (cf. point 4.1 above). Therefore the considerations having regard to inventive step given in points 4.2 to 4.6 above and the conclusion drawn in point 4.7 above in respect of the auxiliary request apply to also to the main request, i.e. the subject-matter claimed therein is equally obvious and does not involve an inventive step.

7. In these circumstances, the Appellant's main request shares the fate of the auxiliary request in that it too is not allowable for lack of inventive step pursuant to Article 56 EPC.

8. *Reimbursement of the appeal fee*

The Appellant based his request for reimbursement of the appeal fee on the allegation in the Statement of Grounds of Appeal, section 3 that a substantial procedural violation occurred because "in its decision the Examining Division seriously erred in that it relied on arguments which were not only scientifically incorrect but on which the applicants had been given no opportunity to comment" (emphasis added). At the oral proceedings before the Board, the Appellant pointed to the technical view expressed by the Examining Division in the second paragraph of point 5.2 of the decision under appeal and put forward that this view had not been communicated beforehand to him and that it was scientifically incorrect.

This is a serious allegation in that it amounts to pretending that the decision to refuse the application was taken in breach of Article 113(1) EPC. However, before the decision under appeal was taken, the Examining Division uncontestedly communicated to the Appellant in detail the facts, the evidence and the reasons resulting in the finding of lack of inventive step. The appealed decision of the first instance is based on that evidence and those grounds communicated beforehand to the Appellant thereby satisfying the Appellant's right to be heard as required by Article 113(1) EPC.

The right to be heard pursuant to Article 113(1) EPC only disqualifies fresh evidence and grounds to take a decision on that basis, while the use of a fresh argument, here of a particular technical view, in a decision still based on grounds communicated beforehand is not precluded. Hence the technical argument in the decision under appeal addressed by the Appellant, whether being indeed fresh or not, does not violate any of the Appellant's rights. As to the technical substance of that argument, the Appellant may neither agree with the finding of the Examining Division nor with the technical argument given, but a divergence of views between the Examining Division and the Appellant on the substantive issue of inventive step does not amount to a procedural violation.

For this very reason, regardless of the outcome of the appeal, the Appellant's request for reimbursement of the appeal fee must fail.

Order

For these reasons it is decided that:

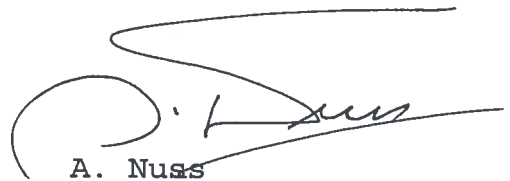
1. The appeal is dismissed.
2. The reimbursement of the appeal fee is refused.

The Registrar:



N. Maslin

The Chairman:



A. Nuss