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File Number: T 366/90 - 3.3.1

Application No.: 83 302 451.6

Publication No.: 0 093 602

Title of invention: Interestification with a lipase enzyme as an
interestification catalyst

Classification: C11C 3/10

D E C I S I O N
of 17 June 1992

Proprietor of the patent: UNILEVER NV

Opponents: 01) Röhm GmbH
02) AB Karlshamns Oljefabriker

Headword: Interestification process/UNILEVER

EPC Articles 52(1), 111(1)

Keyword: "Novelty" - "selection from an open-ended numerical range"

Headnote



Case Number : T 366/90 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 17 June 1992

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(Proprietor of the patent)

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Decision under appeal :

Decision of Opposition Division of the European
Patent Office dated 30 March 1990 revoking
European patent No. 0 093 602 pursuant to
Article 102(1) EPC.

Composition of the Board :

Chairman : K.J.A. Jahn
Members : P. Krasa
J.-C. Saisset

Summary of Facts and Submissions

- I. The mention of the grant of patent No. 0 093 602 in respect of European patent application No. 83 302 451.6 filed on 29 April 1983, was published on 15 July 1987 (cf. Bulletin 87/29) on the basis of twenty claims.

Claim 1 reads:

"Continuous interesterification process in which a water-insoluble organic liquid comprising fatty reactants including a fatty acid glyceride ester is contacted with a lipase enzyme as interesterification catalyst and a small amount of water to activate the catalyst, wherein the catalyst is packed in a fixed bed, characterised in that the catalyst is contacted at flow rates providing a mean residence time with the reactants sufficient to effect interesterification which is less than 2 hours."

- II. Notices of opposition were filed on 31 March 1988 (Opponent 01) and on 15 April 1988 (Opponent 02), requesting revocation of the patent on the grounds of lack of novelty and inventive step.

Opponent II requested revocation also on the ground of insufficient disclosure.

The oppositions were based, inter alia, on the following document:

- (1) EP-A-0 034 065.

This citation refers to the British patent specification:

- (2) GB-A-1 577 933.

III. By a decision dated 30 March 1990 the Opposition Division revoked the patent for lack of novelty of the said Claim 1 in view of document (1).

In the impugned decision the Opposition Division accepted that the expression "... sufficient to effect interesterification" in Claim 1 as granted could be reasonably interpreted as excluding processes which were halted at a considerable distance from equilibrium. However, they also found that no precise minimum degree of interesterification could be read into Claim 1.

The Opposition Division concluded that, therefore, this feature "... sufficient to effect interesterification" could not distinguish the claimed process from citation (1) and revoked the patent for lack of novelty of the subject-matter of Claim 1 as the processes (a) and (c) of Example 2 of document (1) possessed all the technical features of the then valid Claim 1.

IV. An appeal was filed against this decision on 3 May 1990 with payment of the prescribed fee. A Statement of Grounds of Appeal was filed on 8 June 1990.

The Appellant (patent proprietor) argued that the interesterification disclosed in document (1) was an incomplete one and that this citation did not teach substantially complete interesterification such as is achieved within 2 hours mean residence time (MRT) according to the patent in suit. He filed two sets of 13 claims by way of a main and an auxiliary request. Claim 1 of the main request differed from Claim 1 as granted by replacing "... sufficient to effect an interesterification ..." by "... sufficient to effect an interesterification degree of at least 81% ...". This figure resulted allegedly from calculations performed on Example 2 of the

disputed patent. In the Appellant's opinion, these calculations could be performed by a skilled person on the basis of the information available in the patent in suit by methods forming part of his general common knowledge.

V. One Respondent (Opponent 01) submitted that the appeal should be dismissed as inadmissible since it was not properly reasoned due to the lack of information regarding the above-mentioned calculations. Both Respondents contested that the subject matter of the thus amended claims was unambiguously derivable from the application documents as originally filed and submitted that the subject-matter of the patent in suit was anticipated by document (1), in particular Example 2(a) and (c).

VI. Oral proceedings took place on 17 June 1992. One Respondent (Opponent 01), although duly summoned, did not participate as he had announced in his letter dated 14 May 1992. At the beginning of the oral proceedings, the Board indicated to the parties that a degree of interesterification, incorporated into the amended Claim 1 of the above main request (and also of the auxiliary request) was not deemed to be a technical feature of the claimed process but was rather its desired result and, therefore, had to be disregarded when establishing the novelty and inventive step of the claimed subject-matter.

The Appellant countered this objection by filing a new set of twelve claims, Claim 1 of which reads:

"Continuous interesterification process in which a water-insoluble organic liquid comprising fatty reactants including a fatty acid glyceride ester is contacted with a 1,3 specific lipase enzyme as interesterification catalyst and a small amount of water to activate the catalyst, wherein the catalyst is packed in a fixed bed,

characterised in that the catalyst is contacted at flow rates providing a mean residence time of 1 - 30 min. to effect interesterification."

The Respondent (Opponent 02) submitted that the subject-matter of this claim was anticipated by document (1). In his opinion Examples 2(a) and 2(c) of this citation exemplify the normal residence times which a skilled person would apply in the fixed bed interesterification disclosed in this citation and, as the skilled person would always be interested in reducing the MRT, this reference also implicitly discloses the MRTs of 1 to 30 minutes, now claimed.

VII. The Appellant requested that the impugned decision be set aside and that the patent be maintained in amended form on the basis of the set of Claims 1 to 12 as submitted in the course of the oral proceedings. The Respondents requested that the appeal be dismissed.

At the end of the oral proceedings, the Chairman announced the decision of the Board to allow the appeal.

Reasons for the Decision

1. Admissibility

In his Grounds for Appeal the Appellant criticised the Opposition Division's finding that citation (1) anticipated the subject matter of Claim 1 as granted in the absence of a precise lower limit of the conversion degree. He submitted that a substantially interesterification would mean more than a conversion degree of 75% which can be calculated for Example 2(c) of document (1), sample 8. Even if the details of such

calculations were not given, the Appellant's main argument is clear, that "substantially complete interesterification" referred to in the patent in suit is distinguished from the incomplete interesterification disclosed in reference (1); cf. paragraphs 2 and 5 of the Grounds of Appeal. Hence, the requirements of Article 108, third sentence are met, as are the other requirements of Articles 106 to 108 and Rule 64 EPC. Therefore, the appeal is admissible.

2. Amendments

Present Claim 1 differs from Claim 1 as granted by specifying the type of lipase enzyme and by replacing "... a mean residence time with the reactants sufficient to effect interesterification which is less than 2 hours." by "... a mean residence time of 1 - 30 min. to effect interesterification.". Both amendments are supported by the patent specification (page 2, lines 43 to 51 in combination with page 3, lines 28 to 30; and page 3, line 23) and the corresponding passages in the application documents as originally filed (page 3, second paragraph together with page 5, second paragraph; and page 5, lines 15 and 16). Furthermore, since these amendments clearly amount to a restriction of the scope of protection of the present Claim 1 as compared to Claim 1 as granted, no objections arise under Article Article 123 EPC. Thus, these amendments are allowable.

3. Novelty

3.1 The interesterification process for fatty reactants of present Claim 1 has the following features:

- it is a continuous process, which

- uses a water-insoluble organic liquid as the reaction medium, and
- a 1,3-specific lipase enzyme as a fixed bed catalyst;
- the catalyst is activated with a small amount of water;
- the MRT to effect interesterification is 1 to 30 minutes.

A very similar process, which exhibits the same first four of the above features is disclosed in document (1); see the paragraph bridging pages 2 and 3 and Examples 2(a) and (c), page 8, line 19 to page 9, line 17, and page 9, line 31 to page 10, line 27. No data at all are explicitly given in document (1) with respect to MRTs.

However, as far as the process parameters are concerned, citation (1) refers also to document (2), as it states that "... compositions of the invention may be obtained with the aid of the selective interesterification method described in our British Patent 1,577,933." (page 2, lines 27 to 29). Therefore, document (1) cannot be considered in isolation but only in conjunction with document (2) insofar as the reaction conditions are concerned.

This latter document, which, thus, is incorporated by reference into the disclosure of citation (1), discloses an interesterification process for fat products utilising water activated, carrier bound lipases such as, inter alia, those from Rhizopus, which are 1,3-specific (page 1, lines 5 to 16 and page 2, lines 1 to 4). This citation focuses on a batch process and rather incidentally mentions a fixed bed process. The relevant passage in this context reads (page 2, lines 7 to 9):

" ... the process of the invention usually takes from 20 to 72 hours to complete, according to the conditions, less with fixed beds, ...".

The shortest reaction times to be found in Examples 1 to 14 and 16, which all relate to batch processes, are 2 days or 48 hours (no reaction times are given in Example 15). In the Board's judgment, these reaction times for the batch process have to be related to the MRTs of the continuous interesterification process, as both represent the contact time of the reaction mixture with the catalyst.

3.2 The combined disclosure of documents (1) and (2) imparts to the skilled person a MRT of "less than 20 to 72 hours" and as tangible figures, which can be determined from Examples 2(a) and 2(c) of document (1), 46 to 92 minutes, and 65 or 72 minutes, respectively, (compare the table on page 4 of the Respondent's submission of 1 June 1998, filed in the course of the opposition proceedings). These figures were calculated by the Respondents on the basis of particular presumptions, which could be made only by having knowledge of the patent in suit.

3.3 It is established jurisprudence of the Boards of Appeal that a sub-range selected from a broad range of numbers may be novel in respect to the latter. It is decisive to establish whether or not a skilled person would have seriously contemplated, on the basis of the information derivable from the citations (1) and (2) in combination with his common general knowledge, applying the technical teaching of the prior art to the rather narrow selected sub-range (compare T 666/89, paragraph 7 of the reasons, headnote published in OJ EPO 1992/6, following T 26/85, OJ EPO 1990, 22).

In the Board's judgment, the passage quoted from document (2) points, as far as fixed-bed processes are concerned, to MRTs which are, while being "less than 20 to 72 hours", still in the order of magnitude of some, perhaps some few, hours. Even the values of MRTs derivable from the Examples 2(a) and 2(b) are in the order of magnitude of 1 hour.

Thus, the Board concludes that in the absence of additional information to that end, the skilled person would not have seriously contemplated further reducing the MRTs and, consequently, that the feature of the presently claimed process "a mean residence time of 1 - 30 min. to effect interesterification" had not been made available to the public. It follows that the subject matter of present Claim 1 is novel.

3.4 It remains to establish whether or not the Respondent's argument that only formal novelty is artificially created by the incorporation of a MRT of 1 to 30 minutes into Claim 1 is valid. This would imply that the range now selected from the broad range of the prior art, which as a matter of fact was an open-ended range due to the lack of a lower limit, was only an arbitrary specimen of this prior art.

However, the above finding of novelty is confirmed by the fact that the shorter MRTs as claimed result in the formation of less undesired by-products in the course of the interesterification process. This was already set out in the patent in suit (page 3, lines 9 to 11) and was emphasised by the Appellant during the oral proceedings. Thus, the range of 1 to 30 minutes for the MRTs is not a mere embodiment of the prior art and, therefore, the Respondent's objection is invalid.

In this connection it is appropriate to reiterate the established jurisprudence of the Boards that no particular effect is required for establishing novelty. However, its existence may serve as a confirmation that what is at stake, is not a mere embodiment of the prior art, but another invention (compare T 666/89, paragraph 8 of the reasons, headnote published in OJ EPO 1992/6, following T 198/84, OJ EPO 1985, 209, paragraph 7 of the reasons).

- 3.5 The processes of the dependent Claims 2 to 12, which are particular embodiments of the subject-matter of Claim 1, are, therefore, also novel.
4. The Opposition Division has not yet considered the questions of inventive step and of sufficiency of disclosure. The Board finds it inappropriate to decide these issues and makes use of its power under Article 111(1) EPC to remit the case to the Opposition Division for further prosecution.

Order

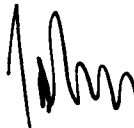
For these reasons, it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance for further prosecution on the basis of Claims 1 to 12 as filed during the oral proceedings.

The Registrar:


E. Gorgmaier

The Chairman:


K. Jahn