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Datasheet for the decision of 5 October 2019

Case Number: T 1457/15 - 3.3.06

Application Number: 04813931.5

Publication Number: 1692295

IPC: C12N11/04, C12N11/14

Language of the proceedings: EN

Title of invention:
Immobilization of enzymes by template-directed silicate precipitation

Patent Proprietor:
Danisco US Inc.

Opponent:
Novozymes A/S

Headword:
Immobilization of enzymes/Danisco

Relevant legal provisions:
EPC Art. 123(2)

Keyword:
Amendments - added subject-matter (yes)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 1457/15 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 5 October 2019

Appellant: (Opponent)	Novozymes A/S Krogshøjvej 36 2880 Bagsværd (DK)
Representative:	Rupp, Christian Mitscherlich PartmbB Patent- und Rechtsanwälte Sonnenstraße 33 80331 München (DE)
Respondent: (Patent Proprietor)	Danisco US Inc. 925 Page Mill Road Palo Alto, CA 94304-1013 (US)
Representative:	Marks & Clerk (Luxembourg) LLP 44, rue de la Vallée 2661 Luxembourg (LU)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 20 May 2015 maintaining European Patent No. 1692295 in amended form.**

Composition of the Board:

Chairman	J.-M. Schwaller
Members:	G. Santavicca
	R. Cramer

Summary of Facts and Submissions

I. The decision lies from the interlocutory decision of the Opposition Division maintaining European Patent No. 1 692 295 on the basis of the auxiliary request filed during the oral proceedings held on 23 April 2015, independent claims 1 and 12 of which have the following wording (amendments to claims 1 and 14 as granted made apparent by the Board):

"*1. A method for preparing a biocomposite comprising the steps of:*

(a) mixing together (i) a enzyme solution comprising one or more enzymes, (ii) a template solution comprising an organic template molecule, wherein said organic template molecule is a polyamine ~~or a modified polyamine~~, and (iii) a buffered silicate solution having a silicate concentration between 10 mM to 1 M and a pH between 5 to 9, wherein the buffered silicate solution is prepared from alkali metal silicates ~~or alkyl siliconate salts~~ as silicate precursors;

(b) simultaneously precipitating said one or more enzymes, said alkali metal silicates ~~or alkyl siliconate salts~~ and said polyamine ~~or said modified polyamine~~ from the mixture of the solution to form a co-precipitate, and

(c) removing the supernatant and recovering the co-precipitate to obtain a biocomposite comprising said one or more enzymes,

wherein the enzyme in the biocomposite exhibits an activity of at least 50% when compared with a free, unimmobilized enzyme.

"~~14~~12. A biocomposite prepared by the method comprising the steps of:

(a) mixing together (i) an enzyme solution comprising one or more enzymes, (ii) a template solution comprising an organic template molecule, wherein said organic template molecule is a polyamine ~~or a modified polyamine~~, and (iii) a buffered silicate solution having a silicate concentration between 10 mM to 1 M and a pH between 5 to 9, wherein the buffered silicate solution is prepared from alkali metal silicates ~~or alkyl siliconate salts~~ as silicate precursors;

(b) simultaneously precipitating said one or more enzymes, said alkali metal silicates ~~or alkyl siliconate salts~~ and said polyamine ~~or said modified polyamine~~ from the mixture of the solution to form a co-precipitate, and

(c) removing the supernatant and recovering the co-precipitate to obtain a biocomposite comprising said one or more enzymes,

wherein the enzyme in the biocomposite exhibits an activity of at least 50% when compared with a free, unimmobilized enzyme."

II. In its grounds of appeal, the opponent (hereinafter the "appellant") objected to the subject-matter of these claims under Article 123(2) EPC).

III. The patent proprietor (hereinafter "the respondent") has neither submitted a response to the grounds of appeal, nor any other submission.

IV. The Board gave a preliminary opinion that the subject-matter of upheld claims 1 and 12 appeared to extend beyond the content of the application as filed.

V. In the absence of any response by the respondent, which also did not request oral proceedings, the hearing was cancelled.

VI. The final requests of the parties were thus as follows:

The **appellant** (**opponent**) requested that the decision under appeal be set aside and that the patent be revoked in its entirety.

The **respondent** (**patent proprietor**) did not file any request during the appeal proceedings.

Reasons for the Decision

1. *Allowability of amendments (Article 123(2) EPC)*

1.1 The appellant held the subject-matter of above claims 1 and 12 to infringe Article 123(2) EPC as it includes non admissible intermediate generalisations as well as a number of selections from different lists, which were not directly and unambiguously derivable from the application as filed.

1.2 For the board, even if certain features of claim 12 are found in the combination of original claim 1 (mentioning biocatalysts, silicate/organosilicate, N-containing organic template), claim 4 (mentioning enzyme as biocatalyst) and claim 9 (mentioning a list of alternative N-containing organic template), these claims do not all refer back to each other, and the following further features are missing therefrom:

i) that the buffered silicate solution is prepared from alkali metal silicates as silicate precursor,
ii) the simultaneous co-precipitation of the one or more enzymes, alkali metal silicates and polyamine, and
iii) that the enzyme in the biocomposite exhibits an activity of at least 50% when compared with a free, unimmobilised enzyme.

1.2.1 Concerning i), according to page 6, lines 28 ff. or claim 20, the preparation of the buffered silicate solution requires "mixing a dilute alkali metal silicate solution or alkyl siliconate salt solution with an aqueous solution or an acidic resin to reduce the pH to 12 or lower", which features are not recited in claim 1 or 12, with the consequence that the feature that "the buffered silicate solution is prepared from alkali metal silicates as silicate precursor" defined in claim 12 at issue represents an inadmissible intermediate generalisation.

1.2.2 Similarly the feature that "the biocomposite exhibits an activity of at least 50% when compared with a free, unimmobilized enzyme", is not disclosed as such in combination with the other features of claim 12 in the application as filed.

1.2.3 Also the simultaneous co-precipitation of the one or more enzymes, alkali metal silicates and polyamine is not directly and unambiguously derivable as such - in particular the specific combination of these three components - from the application as filed.

1.2.4 It follows from the foregoing that there is neither a direct and unambiguous disclosure, nor a pointer thereto in the application as filed for the combination

of features defined in claim 12 at issue, which therefore contravenes Article 123(2) EPC.

1.3 This conclusion applies similarly to the process of claim 1 at issue.

2. As the sole request on file falls because its subject-matter contravenes the requirements of Article 123(2) EPC, the further objections raised by the appellant need not be decided.

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:

A. Pinna J.-M. Schwaller

Decision electronically authenticated