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Datasheet for the decision of 23 April 2013

Case Number: T 2030/10 - 3.3.06

Application Number: 04714336.7

Publication Number: 1596955

IPC: B01D 15/08

Language of the proceedings: EN

Title of invention:
A simulated moving bed system and process

Patentee:
DuPont Nutrition Biosciences ApS

Opponent:
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Headword:
-

Relevant legal provisions (EPC 1973):
EPC Art. 84

Keyword:
"Clarity (no) - Apparatus defined by features relating to its use"

Decisions cited:
-

Catchword:
-

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Case Number: T 2030/10 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 23 April 2013

Appellant: (Applicant)
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Decision under appeal:
Decision of the Examining Division of the European Patent Office posted 26 April 2010 refusing European patent application No. 04714336.7 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: P. Ammendola
Members: G. Santavicca
U. Tronser

Summary of Facts and Submissions

I. The appeal lies from a decision of the Examining Division refusing European patent application 04 714 336.7 (WO 2004/076021 A1).

II. Claim 1 of the Main Request underlying the decision under appeal read as follows:

"An SMB system for fractionating a solution into two or more fractions, the system comprising at least two compartments, which comprise a distributing device, a resin bed and a collecting device, wherein at least one of the compartments serves as a feed compartment characterized in that the diameter of the compartments is at least about one meter and the height of the compartments is from about 0.2 to about 2.0 m, the compartments are uniformly and fully packed with a polymer-based ion exchange resin with a bead size in the range from about 50 to about 250 µm and the resin has a uniform size distribution, and the system provides a mixing volume of the fluid fronts between the resin beds of two adjacent compartments of not more than 5% of the volume of the resin bed in any of the compartments, wherein the mixing volume between the resin beds of two adjacent compartments is the mixing of the fluid fronts in the collecting device of the first compartment, in the intermediate piping between the two compartments and in the distributing device of the second compartment."

III. In the decision under appeal, as to Clarity (Article 84 EPC 1973), it was *inter alia* held that Claim 1 of the Main Request contained features concerning the mixing

volume that were still unclear, as there was no standardised way to reliably measure the mixing volume and, as also admitted by the applicant, the measurement depended not only on the actual design of the intermediate structure (distribution and collection devices) but also on process parameters such as viscosity which could not be calculated. Since the skilled person was unable to reliably determine the mixing volume defined by Claim 1 within the given constraints (height, diameter, bead size), Claim 1 of the Main Request was unclear (Article 84 EPC 1973).

IV. With the statement setting out the grounds of appeal the applicant (appellant) requested that the decision under appeal be set aside and that a patent be granted on the basis of Claims 1 to 41 of the set of claims enclosed therein.

Claim 1 of this request differs from Claim 1 of the Main Request underlying the decision under appeal (Point II, *supra*) in that the wording
"and the system provides a mixing volume of the fluid fronts between the resin beds of two adjacent compartments of not more than 5% of the volume of the resin bed in any of the compartments, wherein the mixing volume between the resin beds of two adjacent compartments is the mixing of the fluid fronts in the collecting device of the first compartment, in the intermediate piping between the two compartments and in the distributing device of the second compartment"
has been replaced by the wording
"and wherein the mixing volume of the fluid fronts caused by the distribution and collection devices in the compartments and the intermediate piping between

the resin beds of two adjacent compartments is minimized to be not more than 5% of the volume of either one of the adjacent compartments".

V. In a communication in preparation for oral proceedings, the Board *inter alia* indicated a number of objections as to compliance of Claim 1 with Article 84 EPC 1973, including those on which the present decision is based.

VI. The appellant replied to this communication with a letter only announcing that it would not attend the oral proceedings.

VII. Oral proceedings took place on 23 April 2013 in the absence of the duly summoned applicant.

VIII. As regards Clarity of the feature "mixing volume of the fluid fronts", the appellant *inter alia* argued that the conditions for measuring the mixing volume did not need to be standardised and that the mixing volume of the fluid fronts was measured at the operating conditions of the SMB system. Either of ascending and descending fluid fronts should not exceed 5% of the volume of the compartment. Since the concept of mixing volume was clear and could be readily determined by a skilled person, Claim 1 complied with Article 84 EPC 1973.

Reasons for the Decision

1. The appeal is admissible.

Clarity (Article 84 EPC 1973)

2. Claim 1 concerns a simulated moving bed (SMB) System for fractionating a solution into two or more fractions.

2.1 A claim to a system comprising cooperating compartments, such as chromatographic units, is a claim directed to an apparatus, a physical entity.

2.2 Claim 1 contains a feature, the mixing volume of the fluid fronts, which is functionally related to the actual use of the apparatus and, thus, is not suitable to define the SMB apparatus.

2.3 In particular, it is not clear what is the reach and scope of expressions such as "mixing volume" and "fluid fronts", for the following reasons:

2.3.1 The Board preliminarily notes that these expressions are not mentioned in any of the prior art documents, apart from co-pending application PCT/FI03/00989 (WO 2004/060526 A1) (in the following D0). Hence, these expressions do not appear to have a generally recognised meaning.

2.3.2 The only specific disclosures as to mixing volume and fluid fronts given in the application as filed are as follows:

(a) the mixing volume is not directly related to the actual physical volumes of the pipelines, pumps, distribution and collection devices, etc (page 8, lines 15-17);

(b) the mixing volume is dependent on how well the distribution and collection devices are working (page 8, lines 17-18); and,

(c) a "fluid front" is a concentration gradient between different components in the moving phase (page 9, lines 22-24).

2.3.3 However, the first disclosure on the mixing volume only confirms that this latter is not a structural feature of the apparatus per se.

2.3.4 As to the second disclosure, the present application, apart from a general reference to D0 (page 9, lines 31-32), does not specify which distribution and collection devices may be used, e.g. which device of D0 is used in the examples. On the other hand, D0 does not disclose which distribution and collection devices are suitable for attaining the reduction of the mixing volume of the fluid fronts to the limit of 5%.

2.3.5 As regards the "fluids fronts", the Board notes that the vague definition given in the description is not even reproduced in Claim 1. Also, the Board understands from the teaching of Example 4 that the mixing volumes of both fluid fronts have to be considered separately, i.e. front and tail of the output pulse (broadened band), which fact is not apparent either from the definition in Claim 1 and represents a further source of uncertainty.

2.3.6 The above disclosures are thus not only vague but certainly imply that specific process conditions influence the mixing volume of the fluid fronts.

2.4 Since the same system operated under different conditions might give different mixing volumes of the fluid fronts, the definition of the SMB system by the use feature "mixing volume of the fluid fronts" is not clear (Article 84 EPC 1973).

2.5 Thus, already for this reason Claim 1 lacks clarity.

3. In view of this decision, the further questions of clarity raised in the communication by the Board need not be dealt with.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Magliano P. Ammendola