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Datasheet for the decision of 1 February 2011

Case Number: T 1345/08 - 3.3.07

Application Number: 02806707.2

Publication Number: 1385622

IPC: B01J 20/30

Language of the proceedings: EN

Title of invention:
Continuous process and apparatus for the efficient conversion of inorganic solid particles

Applicants:
Albemarle Netherlands B.V.

Headword:
-

Relevant legal provisions:
EPC Art. 84, 111(1), 123(2)

Relevant legal provisions (EPC 1973):
-

Keyword:
"Amendments - added subject-matter (no)"
"Claims - clarity (yes)"
"Decision re appeals - remittal (yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 1345/08 **-** 3.3.07

D E C I S I O N
of the Technical Board of Appeal 3.3.07
of 1 February 2011

Appellants: Albemarle Netherlands B.V.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 20 February 2008 refusing European application No. 02806707.2 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: J. Riolo
Members: D. Semino
M.-B. Tardo-Dino

Summary of Facts and Submissions

I. The appeal lies from the decision of the Examining Division of 7 February 2008 refusing European patent application No. 02 806 707.2. The application as filed comprised 30 claims, independent process claim 1 and independent apparatus claim 25 reading as follows:

"1. Continuous process for the conversion of inorganic solid starting particles which either are amorphous or possess a degree of order into inorganic solid product particles which
(a) when the starting particles are amorphous, possess a degree of order, or
(b) when the starting particles possess a degree of order, possess a different order, a different degree of order, or no order,
which product particles are suitable for use in or as a catalyst, in or as a carrier, or in or as an adsorbent, in which process the starting particles are dispersed in a liquid thus forming a suspension, characterised in that the suspension flows through at least two separate conversion vessels (3) which are connected in series and in that the suspension is agitated in each of these vessels (3)."

"25. Apparatus suitable for carrying out the process according to any of the preceding claims comprising a feed preparation vessel (1) for dispersing the particles in a liquid so as to form a suspension, characterised by at least two separate and substantially vertical conversion vessels (3) which are connected in series and which each comprise a mixer (5) for agitating the suspension."

II. The decision was based on the main request filed with letter of 28 June 2004, auxiliary request 1 filed with letter of 7 January 2008 and auxiliary request 2 filed during oral proceedings on 7 February 2008.

In the main request the independent claims had been amended in that it had been specified in the process claim that "the suspension flows substantially upward through the said vessels and/or the agitation is exerted on the suspension in mainly axial direction" and in the apparatus claim the mixer in the conversion vessels had been defined to be "an axial or co-axial mixer". Auxiliary request 1 further included in the independent process claim the specification that "the solids to liquid ratio of the suspension is in the range from 0.15 to 1.33". In auxiliary request 2 all apparatus claims had been deleted and independent process claim 1 included in addition to the amendments of the main request a limitation concerning the materials of the inorganic solid starting particles and of the product particles and a definition of the expression "degree of order".

III. The decision, which made reference to a single prior art document (D1, JP-A-06 219727, English translation), can be summarised as follows:

(a) In the main request the independent process claim did not meet the requirements of Article 84 EPC due to the insufficient definition of the starting materials and of the products, due to the lack of essential features in the conversion process and also due to the definition of the change of degree

of order as a result to be achieved which the process as claimed did not bring about by itself. The independent apparatus claim was not inventive in view of D1 and the common general knowledge of the skilled person.

(b) The independent process claim of auxiliary request 1 did not meet the requirements of Article 123(2) EPC in view of the lower limit of the range of the solids to liquid ratio, which was based on the value of an example, which could not be generalised. The independent apparatus claim of auxiliary request 1 was not inventive for the same reason as the independent apparatus claim of the main request.

(c) Process claim 1 of auxiliary request 2 still did not meet the requirements of Article 84 EPC for the lack of essential features in the conversion process and for the definition of the change of degree of order as a result to be achieved.

As an *obiter dictum*, the Examining Division gave the opinion that at least the second alternative ("the agitation is exerted on the suspension in mainly axial direction") of the independent process claim of the main request was not inventive for the same reasons as given for the apparatus claim.

IV. On 17 April 2008, the applicants (appellants) filed a notice of appeal against the above decision, the prescribed appeal fee being paid on the same day. With the statement setting out the grounds of appeal filed

on 27 June 2008, the appellants submitted five sets of claims as main and first to fourth auxiliary requests.

V. With the summons to oral proceedings of 19 November 2010, the Board's preliminary opinion was communicated to the appellants.

VI. In their response to a communication of the Board, the appellants submitted with letter of 10 January 2011 four sets of claims as main as first to third auxiliary requests on which further proceedings should be based.

VII. Oral proceedings were held on 1 February 2011. During the oral proceedings, the appellants filed a new main request and a new first auxiliary request and renamed the third auxiliary request filed with letter of 10 January 2011 as second auxiliary request. The main request included only process claim, among which a single independent claim, which read as follows:

"1. Continuous process for the conversion of inorganic solid starting particles into inorganic solid product particles involving a change in crystallinity, which product particles are suitable for use in or as a catalyst, in or as a carrier, or in or as an adsorbent, in which process the starting particles are dispersed in a liquid thus forming a suspension, characterised in that the suspension flows through at least two separate conversion vessels (3) which are connected in series, the suspension is agitated in each of these vessels (3), the suspension flows substantially upward through the said vessels and wherein the solids to liquid ratio of the suspension is in the range from 0.5 to 1.33."

VIII. The appellants argued that claim 1 of the main request filed at the oral proceedings was based on claims 1, 3 and 12 and a passage on page 14 of the application as originally filed, that the breadth of that claim did not result in lack of clarity and that no document available in the procedure related to an increase in efficiency which could allow running the reactions according to the claim at high solids to liquid ratios, so that also the presence of an inventive step should be acknowledged.

IX. The appellants requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request or, alternatively, of the first auxiliary request as filed during the oral proceedings on 1 February 2011, or of the second auxiliary request (previous third auxiliary request filed with letter of 10 January 2011). Alternatively, they requested the remittal to the first instance.

Reasons for the Decision

1. The appeal is admissible.

Main Request

2. *Amendments*

2.1 In addition to the inclusion of the features of original dependent claims 3 ("the suspension flows substantially upward through the said vessels") and 12 ("the solids to liquid ratio of the suspension is in the range from 0.5 to 1.33"), claim 1 of the main

request differs from claim 1 as originally filed in that it has been deleted that the starting particles "either are amorphous or possess a degree of order" and that the product particles "when the starting particles are amorphous, possess a degree of order, or when the starting particles possess a degree of order, possess a different order, a different degree of order, or no order". Instead, the transformation of the starting particles into the product particles has been concisely expressed as "involving a change in crystallinity".

2.2 On page 14, line 16 of the application as filed it is specified that changing the crystallinity means changing the degree of order, so that the amended definition of the transformation clearly means that the particles undergo a change from a first degree of order to a second different degree of order. This amounts to the limitation to one of the possible options of original claim 1, namely the one in which the starting particles possess a degree of order and the product particles possess a different degree of order, so that the replacement of the deleted features with the concise definition of the transformation does not result in an extension of the subject-matter.

2.3 Dependent claims 2 to 23 of the main request correspond to claims 2 and 4 to 24 as originally filed with the necessary amendments in the dependencies due to a partial renumbering.

2.4 The claims of the main request meet therefore the requirements of Article 123(2) EPC. In this respect it is noted that the only objection under Article 123(2) EPC in the appealed decision referred to a value of the

lower limit of the range of the solids to liquid ratio of the suspension, which value does not appear in the claims of the main request.

3. *Article 84 EPC*

3.1 Claim 1 of the main request defines a process for the conversion of starting particles into product particles, wherein the particles are only limited in that both the starting particles and the product particles are solid and inorganic and in that the product particles are suitable for use in or as a catalyst, in or as a carrier, or in or as an adsorbent. No specific limitation is given as to the type of inorganic material.

3.2 The conversion process itself is defined by the steps of dispersing the starting particles in a liquid to form a suspension, flowing the suspension substantially upward through at least two vessels in series and agitating the suspension in each of the vessels. No limitation is given on the operating conditions, e.g. in terms of specific values of temperature, pressure and pH, apart from the specification that the solids to liquid ratio of the suspension is in the range from 0.5 to 1.33.

3.3 There is no doubt that the terms used for defining both the particles and the process steps are *per se* clear. The lack of specification of the type of inorganic materials which are converted and of the process conditions under which conversion takes place may surely render the claim a broad one, but cannot in itself result in lack of clarity. In this respect it is

worthwhile mentioning that the jurisprudence of the Boards of Appeal is consistent in considering that the broadness of a claim cannot be contested on its own, but only in conjunction with other criteria, such as novelty, inventive step or reproducibility (Case Law of the Boards of Appeal of the EPO, 6th Edition 2010, II.B.1.1.5).

3.4 As to the further requirement under Article 84 EPC that all features which are necessary for solving the technical problem with which the application is concerned, i.e. all essential features, are present in the independent claims (Case Law, *supra*, II.B.1.1.4), according to the application the technical problem of allowing to process suspensions with high solids to liquid ratios is solved by means of agitation and the use of a series of separate vessels (page 5, lines 7-9 and 21-23). By means of this an unacceptable level of segregation of the solid particles is avoided independently of the kind of material of the particles and of the process conditions. No other feature appears to be essential to solve the posed technical problem, so that the requirements of Article 84 EPC are also met in this respect.

3.5 As to the specification that the conversion process involves a change in crystallinity which amends by limiting the original definition of the transformation (see points 2.1 and 2.2, *supra*), there is no doubt that this feature defines a result which is aimed at by the claimed process. However, this is allowable in the present case, since the skilled person knows, without exceeding his normal skills and knowledge, what he has to do in order to obtain said result, namely to choose

appropriate process conditions, many examples of which are given in the application. Since it is not disputed that the reactions involving a change in crystallinity are known, it is not the case here that the result to be achieved is a result obtained for the first time which could put the skilled person in the position of not knowing how to achieve it.

3.6 For these reasons claim 1 of the main request meets the requirements of Article 84 EPC.

4. *Novelty*

4.1 The Examining Division did not object lack of novelty of the independent process claim of the main request before it, which was broader than process claim 1 of the main request under scrutiny. The Board has no reason to take a different position on novelty with respect to the available prior art.

5. *Inventive step - Remittal*

5.1 The Examining Division decided on inventive step only with respect to apparatus claims, whereas no apparatus claim is present in the current main request. Only in an *obiter dictum* the Examining Division expressed an opinion on process claim 1 of the then main request, however with reference to an alternative ("the agitation is exerted on the suspension in mainly the axial direction"), which is no longer present in claim 1 of the main request, and for a process which had no limitation as far as the solids to liquid ratio in the suspension is concerned.

5.2 As submitted by the appellants, the feature that "the solids to liquid ratio of the suspension is in the range from 0.5 to 1.33" is the crucial one in the assessment of inventive step for claim 1 of the main request. The relevance of this feature for the presence of an inventive step has however not been appreciated by the Examining Division, nor is any prior art present on file which permits its appreciation.

5.3 In view of this, the Board considers it appropriate to remit the case to the first instance for the assessment of inventive step of the main request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance for further prosecution.

The Registrar The Chairman

S. Fabiani J. Riolo