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Datasheet for the decision of 29 June 2016

Case Number: T 2358/13 - 3.3.06

Application Number: 05810385.4

Publication Number: 1713565

IPC: B01D53/04, B01J20/04

Language of the proceedings: EN

Title of invention:
ENHANCED CARBON DIOXIDE ADSORBENT

Applicant:
Micropore, Inc.

Headword:
Carbon dioxide adsorbent/Micropore

Relevant legal provisions:
EPC Art. 84, 111(1), 123(2)
RPBA Art. 13(1), 13(3)

Keyword:
Late-filed request - admitted (yes) - submitted in reaction to Board's communication
Amendments - added subject-matter (no)
Claims - clarity - main request (yes)
Remittal to the department of first instance - (yes) - outstanding substantive issues not yet examined

Decisions cited:

Catchword:

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Case Number: T 2358/13 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 29 June 2016

Appellant: (Applicant)	Micropore, Inc. 350 Pencader Drive Newark, Delaware 19714 (US)
Representative:	Manley, Nicholas Michael WP Thompson 8th Floor 1 Mann Island Liverpool L3 1BP (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 24 June 2013 refusing European patent application No. 05810385.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	E. Bendl
Members:	G. Santavicca
	S. Fernández de Córdoba

Summary of Facts and Submissions

I. The appeal lies from the decision of the Examining Division to refuse the European patent application No. 05810385.4 (European publication number 1 713 565).

II. In the decision under appeal, the Examining Division came to the following conclusions:

(a) The Main Request filed at the oral proceedings was not allowable under Article 123(2) EPC, as Claim 1:

(i) contained the feature "*adsorbent structure containing porous lithium hydroxide (LiOH) particles*", which had no basis in the application as filed; and,

(ii) required the particles of lithium hydroxide to have a water content above 1% by weight, which requirement was generalised and could therefore not be found in the application as filed.

(b) The Main Request was not allowable under Article 84 EPC either, as Claim 1 contained a unique parameter for the density of the LiOH, based on the volume of the adsorbent structure, but without the gas flow channels of the adsorbent structure. This unique parameter thus required a specific protocol for its determination, not disclosed in the application however.

(c) Claim 1 of the auxiliary request, also filed at the oral proceedings, still contained the objected to unique parameter. The auxiliary claim request was thus not admitted into the proceedings in view of the requirements of Rule 137(3) EPC.

III. With its statement setting out the grounds of appeal, the Applicant/Appellant filed seven sets of claims and commented on the amendments made.

IV. In a communication pursuant to Article 15(1) RPBA, annexed to the summons for oral proceedings the Board gave its provisional opinion on the issues to be dealt with, in particular under Articles 84 and 123(2) EPC.

V. With its response dated 20 June 2016, the Appellant *inter alia* filed four sets of amended claims.

VI. In a communication faxed on 22 June 2016, the Board explained why the amended claims were not clearly allowable.

VII. With letter dated 24 June 2016, the Appellant filed further four sets of amended claims.

VIII. In a communication dated 27 June 2016, the Board gave its provisional opinion on the latest claims.

IX. With its last letter dated 28 June 2016, the Appellant filed a final, single set of Claims 1-3 as its Main (and sole) Request, replacing all previous claim requests, and announced that it would not attend the oral proceedings.

X. Claims 1 to 3 of the Main Request read as follows:

"*1. An article, comprising: a lithium hydroxide (LiOH) adsorbent for removing CO_2 having an initial water content between approximately 10 percent and approximately 20 percent by weight, or between approximately 20 percent and approximately 43 percent by weight, or between approximately 36 percent and approximately 43 percent by weight, said article being configured in a sheet comprising a polymer and the density of the LiOH adsorbent in sheet form being less*

than approximately 1.0 g/cm^3, wherein the density is the mass of the LiOH adsorbent divided by the volume of the LiOH adsorbent, wherein the mass of the LiOH adsorbent is the mass of the anhydrous LiOH adsorbent and does not include non-LiOH adsorbent components and wherein the volume of the LiOH adsorbent is the volume of the LiOH adsorbent in its sheet form which does not include the volume of the gas-flow channels around the adsorbent sheet."

"*2. The article according to claim 1, further comprising a gas permeable material that encloses said LiOH adsorbent.*"

"*3. The article according to claim 1, wherein the sheet includes a first side and a second side, at least one side having structural protrusions.*"

XI. Oral proceedings were held on 29 June 2016, in the announced absence of the Appellant, pursuant to Rule 115(2) EPC and Article 15(3) RPBA.

XII. The Appellant requested in writing that the decision under appeal be set aside and that a patent be granted on the basis of Claims 1-3 according to the Main (and sole) Request submitted with its last letter dated 28 June 2016.

XIII. The arguments of the Appellant of relevance for the present decision can be summarised as follows:

The sole claim request filed with letter dated 28 June 2016 was clearly admissible, as it overcame all objections raised in the Board's communications.

The amended claims thereof complied with Article 123(2) EPC and their wording was clear and concise (Article 84 EPC).

The particular density to be calculated was now clearly defined in Claim 1. It was specified that in the density calculation the volume was the overall volume of the sheet, excluding the (macroscopic) gas flow channels around the adsorbent sheet, formed by e.g. the presence of the ribs. That density definition was clear and meant that if a ribbed adsorbent sheet were torn into small pieces, the density as defined in Claim 1 would always be the same, regardless of the size or shape of the piece made. This would not be true if the definition included the volume of the gas flow channels between the ribs, around the adsorbent sheet.

Further clarification in this respect could be gathered from the description, in particular from the examples.

Therefore, the grounds for refusal were overcome.

Reasons for the Decision

Admissibility of the new sole claim request

1. The sole claim request annexed to the Appellant's last letter dated 28 June 2016 was filed in response to the objections raised by the Board in its communications.

1.1 The claims were amended with regard to the wording (of the claims) dealt with in the decision under appeal, thereby overcoming all of the objections raised, without creating new issues.

1.2 Claim 1 now *inter alia* clearly defines the density (*infra*), the lack of which (clear definition) had been objected to by the Examining Division (Article 84 EPC).

1.3 Therefore, despite its late filing, the Board decided to admit the new sole claim request into the proceedings (Article 13(1),(3) RPBA).

Allowability of the amendments

2. Article 123(2) EPC

2.1 Claim 1 according to the sole claim request at issue contains the features of Claims 26, 27 (density value), 29-31 (alternative initial water contents) and 36 (adsorbent configured in sheet form) as originally filed and, additionally, the density definition disclosed in the original description (page 6, lines 30-34, page 7, line 3; page 13, lines 10-13; page 20, lines 31-32).

2.2 Since each of Claims 27, 29-31 and 36 only referred to Claim 26, and since features have been taken from the description and combined with features of original claims, it has to be decided whether the combination of features defined in Claim 1 according to the sole claim request is directly and unambiguously derivable from the application as filed.

2.2.1 The feature "*the density of the LiOH adsorbent ... being less than approximately 1.0 g/cm^3*", disclosed in original Claim 27, in itself represents a generally applicable feature, as apparent from the general description, e.g. page 7, lines 15-16.

Thus, as such, it applies to all embodiments of the adsorbent, independently from their configuration.

2.2.2 The three alternative features concerning the initial water content, disclosed in original Claims 29-31 and 43-45, concern a further generally applicable aspect of the invention, as clearly apparent from the general description, e.g. page 5, lines 29-33, dealing with the summary of the invention. See also page 16, lines 14-26, and page 17, lines 12-13. Hence, these features too are of general relevance to the invention, independently from the configuration of the adsorbent.

2.2.3 The feature "*said article being configured in a sheet comprising a polymer*" is the preferred configuration, referred to in Claim 36 and shown in Figures 1B, 2-7, 8-11, 12-15, 17 and 18, described in detail in the corresponding description, and illustrated in both Examples of the patent application as originally filed.

2.2.4 Therefore, the subject-matter of Claim 1 at issue is directly and unambiguously disclosed in the application as originally filed.

2.3 Similar considerations apply to dependent Claims 2 and 3, the wording of which was disclosed *verbatim* in Claims 33 and 37 as originally filed, independently referring directly, respectively indirectly via Claim 36, to Claim 26 as filed.
It is apparent from at least Figures 9 and 17, and from the corresponding description as originally filed

- on pages 9, lines 1-4 (general applicability) and 28-34 (specific application thereof), for the gas permeable enclosure,
- or on page 11, first paragraph, for the structural protrusions,

that the embodiments defined in Claims 2 and 3 are preferred, and can be pre-hydrated (page 13, lines 5-6, or page 14, lines 4-5).

2.4 Therefore, the claimed subject-matter of Claims 1-3 according to the sole claim request is not objectionable under Article 123(2) EPC.

Clarity, conciseness and support by the description (Article 84 EPC)

3. As regards the density of the LiOH adsorbent, Claim 1 now makes clear how to calculate the mass and the volume of the adsorbent in the sheet form.

3.1 The mention of "*gas-flow channels around the adsorbent sheet*", makes clear what has to be **ex**cluded when calculating the volume, hence also what has to be **in**cluded (i.e. pores and voids, which are different from gas-flow channels mentioned throughout the description, as the loss of water (page 7, lines 8-9) produces the pores inside the granules of adsorbent, whilst the removal of oil provides "voids between LiOH particles/granules" (page 13, lines 10-13, and page 20, last line).

3.2 Hence, the volume of the LiOH adsorbent is the volume of the LiOH adsorbent article in its sheet form (page 7, line 3; page 13, lines 10-13; page 20, lines 31-32), which does not include the volume of the gas-flow channels **around** the LiOH adsorbent in sheet form (page 6, lines 31-32), but which includes the internal pore volume of the adsorbent particles/granules and the volume of the voids located between the particles/ granules forming the sheet. This is particularly apparent from page 6, lines 31-32, or from the

paragraph bridging pages 20 and 21, read in connection with page 13, lines 11-13.

3.3 Therefore, the volume to be used in the determination of the density is the overall or bulk volume of the adsorbent article in its sheet form (namely the volume of the sheet including the internal pore volume and the external particle void volume, but excluding the volume of any gas flow channel **around** the adsorbent sheet).

3.4 In this respect, the argument brought forward by the Appellant in its letter dated 20 June 2016 (page 3, first paragraph), namely that whatever piece of the adsorbent article, however cut, would always have the same density, appears to be plausible for the Board. Claim 1 is thus now clear *per se*.

4. The definition is also as concise as possible, due to the alternative features in Claim 1 concerning the initial water content.

5. Finally, Claim 1 is in line with the definition given on page 6, lines 30-34, and also with the examples, e.g. page 21, first four lines. Hence, Claim 1 contains the essential features needed for the definition of the article, and as such is supported by the description.

6. Therefore, the claims at issue cannot be objectionable under Article 84 EPC either.

Conclusion

7. The raised grounds of refusal, lack of clarity and added subject-matter, are no longer prejudicial to the present application.

Novelty and inventive step

8. In the decision under appeal neither novelty nor inventive steps were dealt with. Thus, the Board cannot review the decision under appeal in this respect.

Remittal

9. In the present case, in which the Appellant was able to provide a set of claims overcoming the raised objections, the Board deems it appropriate to exercise its discretion under Article 111(1) EPC and remit the case to the Examining 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 department of first instance for further prosecution.

The Registrar: The Chairman:

D. Magliano E. Bendl

Decision electronically authenticated