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**Datasheet for the decision
of 10 November 2022**

Case Number: T 1320/20 - 3.3.06

Application Number: 11823877.3

Publication Number: 2613934

IPC: B01J20/26, B01J20/28, B32B3/26,
C08J9/00, B82Y30/00

Language of the proceedings: EN

Title of invention:
SIZE SELECTIVE POLYMER SYSTEM

Applicant:
Cytosorbents, Inc.

Headword:
Porous polymer systems/Cytosorbents

Relevant legal provisions:
EPC Art. 84
RPBA 2020 Art. 13(2)

Keyword:
Claims - clarity (no)
Amendment after summons - taken into account (no)

Decisions cited:

Catchword:



Beschwerdekammern
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Case Number: T 1320/20 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 10 November 2022

Appellant: Cytosorbents, Inc.
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Representative: DTS Patent- und Rechtsanwälte
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 3 January 2020
refusing European patent application No.
11823877.3 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman P. Ammendola
Members: R. Elsässer
C. Heath

Summary of Facts and Submissions

- I. The appeal lies from the decision of the examining division to refuse the European patent application 11823877.3. The examining division held *inter alia* that the then pending main request and auxiliary requests 1 to 11 were unclear (Article 84 EPC).
- II. The decision mentions *inter alia* the following documents:
- D5: LOWELL, S. ET AL: Chapter "8 Mesopore analysis", in "CHARACTERIZATION OF POROUS SOLIDS AND POWDERS: SURFACE AREA, PORE SIZE AND DENSITY", SPRINGER SCIENCE+BUSINESS MEDIA, LLC, 2004 (2004), pages 101-128,
- D6: Surface Area and Porosity Analysis - Micromeritics ASAP 2020: Physisorption User notes
- D7: ASAP™ 2020 Accelerated Surface Area and Porosimetry System, Micromeritics, pages 1-8
- III. With the grounds of appeal, the appellant filed a main request and auxiliary requests 1 to 11, apparently identical to those considered in the decision under appeal, and argued *inter alia* that all pending requests were clear.
- IV. After having received the preliminary opinion of the board, the appellant with submission of 10 October 2022 filed seven new sets of claims as auxiliary requests 12, 12a, 13, 13a, 14, 14a or 15 and two new documents D8 (Salil U. Rege and Ralph T. Yang, *Corrected Horvath-Kawazoe Equations*, Dept. of Chemical Engineering, University of Michigan, Ann Arbor, MI 48109, April 2000) and D9 (Operator's Manual ASAP 2010, V.5.03,

October 2002). The appellant argued that the pending requests as well as the seven newly filed auxiliary requests met the requirement of Article 84 EPC.

- V. At the oral proceedings which were held on 10 November 2022, the appellant requested that the decision under appeal be set aside, that the main request be found to fulfill the requirements of Article 84 and 123(2) EPC and that the case be remitted to the examining division for further prosecution, alternatively so on the basis of any of auxiliary requests 1 - 11, all filed with the grounds of appeal, or auxiliary requests 12, 12a, 13, 13a, 14, 14a or 15 filed with letter dated 10 October 2022.

Reasons for the Decision

1. Main request

- 1.1 Claim 1 of the main request reads as follows:

"1. A polymer system comprising at least one polymer with a plurality of pores, said polymer comprises effective pores, said effective pores are the pores having a diameter from greater than 100 Angstroms to 250 Angstroms, and at least one transport pore, which is a pore with a diameter from 250 Angstroms to 2000 Angstroms, said polymer having a transport pore volume, which is a volume of transport pores per unit mass of the polymer, greater than about 1.8% to 78% of a capacity pore of volume of said polymer, which is the volume of capacity pores per unit mass, wherein the capacity pores are the total sum of the effective pores

and the at least one transport pore."

- 1.2 The examining division held that this claim was unclear since the method of measuring the pore diameters and pore volume was not defined in it, contrary to the requirement set out in the EPC guidelines for examination (F-IV 4.11), according to which a measurement method has to be indicated in the claim, unless it is convincingly shown that
- a) the measurement method to be employed belongs to the skilled person's common general knowledge, e.g. because there is only one method, or because a particular method is commonly used; or
 - b) all the measurement methodologies known in the relevant technical field for determining this parameter yield the same result within the appropriate limit of measurement accuracy.

In the case at hand, the examining division concluded from the evidence on file (D5, D6 and D7) that there were several different methods for measuring pore diameters and pore volumes available which lead to different results. Therefore, the division found that neither of the exceptions mentioned in said passage of the guidelines applied so that the claim lacked clarity.

- 1.3 Firstly, it is pointed out that, while the guidelines are not binding for the Boards of Appeal, the passage relied upon by the examining division is based on established jurisprudence which the Board has applied in the case at hand. In doing so, the Board has come to the conclusion that the finding of the examining division was correct. The reasons are as follows:

1.4 In the grounds of appeal, the appellant has stated explicitly that several methods exist which may be used to characterize porous materials, among them nitrogen adsorption and mercury intrusion. In addition, the appellant asserted in the written submissions of 10 October 2022 and also during oral proceedings that (electron)microscopic methods could also be used in order to determine the pore diameters and pore volume. It is therefore undisputed that several different methods for measuring pore sizes and pore volumes are available so that exception a) mentioned above does not apply.

The appellant appears rather to rely on exception b) mentioned above, by additionally submitting that the claimed pore diameter and pore volume values were intrinsic material properties which therefore were not dependent on the various methods that were available. Hence, all available methods for measuring these parameters would lead to basically the same results.

1.5 These arguments are however not convincing.

In the Board's view the determination of pore diameters and their volumes in a real porous material by (electron)microscopic means appears to be problematic if only for the reason that, other than for perfectly spherical or cylindrical pores, pores of a real existing porous material might be irregularly shaped. Moreover, the term "pore diameter" is not further defined in the claim or elsewhere in the application. Thus, it may not be univocally clear which of the dimensions observable by microscopy for a real existing pore is to be taken as the diameter, as the term could certainly refer to the maximum observable diameter but also (and equally plausibly) to some kind of average

diameter. Moreover, in the present context, the pore diameter could possibly even refer to a minimum diameter because the invention is about the accessibility of a pore by proteins of various sizes, which might be governed by the minimum rather than by the maximum diameter of a pore. Hence, the a skilled person aiming as determining the required parameters via direct optical measurement would be obliged to (arbitrarily) choose among several possible definitions of the object of the measure, each of which would produce different "measured" pore diameter values.

- 1.6 The argument that a pore diameter is an intrinsic material property that is independent from the method of measurement is also not convincing, if only for the reason that there is a fundamental difference between a diameter determined by direct or by indirect methods. In the board's view, direct methods, such as electron microscopy, allow the direct measure of "real" intrinsic dimensions of a pore (and thereby its diameter and volume), once that these parameters have been properly defined. However, the same is not true for indirect methods such as nitrogen adsorption, because these methods determine other parameters, such as the amount of gas desorbed and released while going through the desorption isotherm. The results obtained are then used to calculate the diameter, based on various theoretical models. For instance, the model underlying the Kelvin equation is based on the assumption of a cylindrical pore geometry (D5, page 101). Therefore, the result of such an indirect measurement is the diameter of an hypothetical cylindrical pore, even if the real pore geometry is quite different. While various other models are based on different assumptions, the result of such an indirect measurement can only be an approximation of

the "real" pore dimensions. For this reason alone, the results obtained by the various methods available are not identical.

1.7 Even when considering only the gas adsorption and desorption methods, it has not been convincingly shown that the result obtained will be the same, independent of the actual method used. Turning to the methods available on the instrument micromeritics ASAP 2010, D7 discloses on page 7 that the BJH method can be used with a variety of thickness equations, including a user defined option. It is technically implausible to assume that the obtained diameters and volumes would be the same irrespective of the equation used. In the grounds of appeal, the appellant argued that the selection of a suitable method was not arbitrary but followed standardized rules. However, no evidence for this allegation has been filed. In particular, the document ISO 15901 to which the appellant had referred has not been filed and therefore cannot be considered by the board. Likewise, the appellant offered to provide a written expert statement as evidence that the selection of a method and of a suitable algorithm would belong to the common general knowledge of the skilled person, but no such statement has been filed. The appellant also argued that, when working with the ASAP 2010, the "best fit model" would be automatically assigned but there is no evidence for this allegation, either.

1.8 During the oral proceedings, the appellant stressed that D5 only acknowledged discrepancies in the measured values of the relevant parameters in the micropore- and lower mesopore range, i. e. pores with a diameter smaller than the lower limit of 100 Angstroms mentioned in claim 1.

However, the reasoning set out above does not rely on D5 but rather on D7. The relevant section on page 7 of D7 is indeed concerned with "pore volume and pore area distributions in the mesopore and macropore ranges" and is therefore not restricted to small pores.

Finally, it is noted that although D7 does not relate to the instrument ASAP 2010 mentioned in the application but to its successor model ASAP 2020, the disclosure of the document is relevant since the applicant has confirmed that both instruments have the same functionalities (minutes of the first instance oral proceedings, page 2, third paragraph).

The board concludes that, even if the ASAP 2010 instrument is used for measuring the pore diameter and pore volume, different results will be obtained, depending on the thickness equation used in the context of the BJH-method.

1.9 In view of the above, claim 1 of the main request is found unclear (Article 84 EPC).

2. Auxiliary request 1

2.1 In claim 1 of this request, it has been specified that

- (a) the pore structure of the polymer is analyzed with a Micrometrics ASAP 2010 instrument,
- (b) the effective pores are limited to pores which are selectively accessible to proteins smaller than 35,000 Daltons
- (c) and the transport pores are limited to pores which are accessible to proteins larger than 35,000 Daltons".

2.2 Leaving aside the fact that the name of the instrument mentioned in the application is not a "Micrometrics" but "Micromeritics" ASAP 2010, amendment (a) does not overcome the objection for the reasons set out in point 1.7 and 1.8.

2.3 Amendments (b) and (c) do not render the claim clear, either. In this context, it can be noted that the application does not disclose or teach that the accessibility of the pores is or could be used in order to determine the pore diameter or the pore volume. Rather, these parameters are exclusively measured and determined with the ASAP 2010 (without however disclosing the exact method, see above) and this is also explicitly mentioned in claim 1 of the auxiliary request.

On page 5 of the submission of 10 October 2022, the appellant describes how the pore sizes should be assigned by placing the desorption peak in the range between 100-250 Angstrom. However, this argument is confusing since the appellant appears to argue that the figure of the application shows the desorption of proteins ("the peak observed in the desorption spectrum in the figure of the application is derived from the cytochrome-c which has a size of 11.685 Daltons") which is incorrect, since the figure shows various nitrogen desorption isotherms.

Moreover, if the accessibility of the pores by certain proteins should indeed also be considered in the method of determination of the pore diameters and volumes in a certain way, then this methodology should be indicated in the claim, which however is not the case.

3. Auxiliary requests 2-11

With regard to these requests whose claim 1 defines numerical ranges for pore diameters and pore volumes, the appellant has not provided any arguments going beyond those brought forward concerning the main and first auxiliary requests. Neither does the Board see any arguments that would go beyond those already raised for the higher ranking requests. Based on the above findings for the main and first auxiliary requests, the Board concludes that these requests do not meet the requirements of Article 84 EPC for the same reasons as set out with regard to the higher ranking requests.

4. Auxiliary requests 12, 12a, 13, 13a, 14, 14a and 15

4.1 The Board has exercised its discretion not to admit these requests into the proceedings. They were filed with submission of 10 October 2022 and thereby after the notification of a summons to oral proceedings so that Article 13(2) RPBA applies. Said article stipulates that requests filed at this stage of the proceedings should not be taken into account unless there are exceptional circumstances which have been justified with cogent reasons.

4.2 By way of justification, the appellant has pointed out that the requests should be admitted because they were filed already one month before the oral proceedings, but this does not detract from the fact that the requests are late in the sense of Article 13(2) RPBA. Moreover, the requests have been filed more than nine months after the notification of the summons to oral proceedings so that, even within the stage of the proceedings governed by Article 13(2) RPBA, the

requests have been filed very late.

4.3 The appellant has further pointed out that in the present ex-parte case, there was no other party that would be adversely affected by the admission of the requests. This argument is not convincing because the rules of procedure do not distinguish between ex-parte and inter-parte cases. Neither is the board convinced of the argument that failure to admit new requests would amount to a violation of the appellant's right to be heard. This could only be so if the preliminary opinion of the board actually went beyond the reasoning of the contested decision and thus raised points or arguments the appellant could not have addressed earlier. This was not the case, however, as has been explicitly acknowledged by the appellant in the submission of 10 October 2022 according to which the board *"simply stated that the view concerning clarity is not changed"*. Therefore, the board did not raise any new or additional objections that would justify the late filing of an auxiliary request.

4.4 Finally, the argument that the requests should be admitted because they were convergent is also not convincing because convergence might in certain cases be a prerequisite for the admissibility of a late filed request, but it is not a reason which in itself justifies the admission of a late filed request.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



A. Pinna

P. Ammendola

Decision electronically authenticated