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Datasheet for the decision of 7 November 2014

Case Number: T 0901/11 - 3.3.06

Application Number: 07007902.5

Publication Number: 1834692

IPC: B01D67/00, B01D69/12, B01D71/34, B01D71/68

Language of the proceedings: EN

Title of invention:
Process of forming multilayered structures

Applicant:
EMD Millipore Corporation

Headword:
Multilayered structures/Millipore

Relevant legal provisions:
EPC Art. 76(1), 123(2), 84, 52(1), 54(1), 111(1)

Keyword:
Late-filed request - admitted (yes)
Amendments - allowable (yes)
Claims - clarity (yes) after amendment
Novelty - (yes)
Remittal to the department of first instance - (yes)

Decisions cited:

Catchword:

Beschwerdekammern
Boards of Appeal
Chambres de recours

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Case Number: T 0901/11 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 7 November 2014

Appellant: (Applicant)	EMD Millipore Corporation 290 Concord Road Billerica, MA 01821 (US)
Representative:	Brown, David Leslie Haseltine Lake LLP Redcliff Quay 120 Redcliff Street Bristol BS1 6HU (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 29 November 2010 refusing European patent application No. 07007902.5 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	B. Czech
Members:	G. Santavicca
	U. Lokys

Summary of Facts and Submissions

I. The appeal lies from the decision of the examination division to refuse the European patent application No. 07007902.5 (publication number EP 1 834 692 A1).

II. The sole claim request dealt with in the decision under appeal was filed during the oral proceedings held on 9 November 2010, Claim 1 thereof reading as follows:

"*1. An unsupported multilayered microporous membrane having adjacent, inseparable, and integral retentive layers, wherein the membrane is free of: a dense interfacial layer between layers; macrovoids; and skinning at the interface between the layers.*"

III. In the decision under appeal, the examining division came *inter alia* to the following conclusions:

a) Claim 1 fulfilled the requirements of Articles 76(1) and 123(2) EPC.

b) As regards interpretation of Claim 1 (Article 84 EPC), the terms "*inseparable*" and "*integral*" had the same functional meaning, namely that the adjacent retentive layers (of the claimed unsupported multilayered microporous membrane) were bonded together and did not delaminate or separate in normal use.

c) Although the term "*macrovoid*" was defined in the application as filed as "*hollow cavernous structure*" being "*large relative to membrane pore size*", the application as filed did not provide any information about how large these structures should be in relation to pores in order to be

considered as "*macrovoids*", let alone how their presence should be determined. So the expression "*free of macrovoids*" merely had a functional meaning.

d) The expression "*dense interfacial layer*" meant a non-porous layer. Since the application concerned microporous membranes, the absence of a non-porous interfacial layer was an inherent feature of the claimed microporous membrane for microfiltration.

e) The term "*skinning*", which was essentially associated with asymmetrical membranes, lacked any definition in the application as filed. There was no support in the application as filed for the definition invoked by the applicant ("discrete formations or defects at the interface between the layers, similar to dense regions but thinner"). Nor was it derivable from Figure 4 of the application as filed, allegedly representing a prior art membrane. The only meaning for "*skinning*" was thus that of thin porous layer. The application as filed did not provide any guidance as to how the presence of skinning was to be determined. Hence, also this feature only had a functional meaning.

f) As to novelty, D1 (US 5,620,790 A) disclosed symmetric microporous membranes, which thus had no dense layer, prepared by sequential casting. D1 did not explicitly mention the absence of macrovoids and the absence thereof had not been contested by the applicant. Considering the particulars of the process disclosed by D1, which taught away from conditions leading to skinning, there was also no implicit disclosure of "*skinning*

at the interface between the layers". Hence, the claimed membrane could not be distinguished from that of D1, i.e. that it lacked novelty.

IV. With its statement setting out the grounds of appeal, the Appellant *inter alia* submitted a new item of evidence comprising an affidavit by Prof. Wessling ("Wessling Affidavit"), and Appendices A to J. The appellant submitted *inter alia* the following arguments:

a) The basis for the amended claims was clearly acknowledged in the decision under appeal. In the decision, the claims were found to be clear, as apparent from the fact that novelty was dealt with. In any case, the way the meaning of the expressions "*macrovoids*", "*dense interfacial layer*" and "*skinning at the interface between layers*" was discussed in the Wessling affidavit was consistent with their use in the present application.

b) Novelty: The membranes of D1 could not be said to be free of a dense interfacial layer between layers and skinning at the interface between layers.

c) Alleged procedural violation: Resulted from item 4.1 of the decision under appeal, according to which Claims 2 to 7 were refused for lack of an inventive step, which issue had not, however, been dealt with at the oral proceedings.

V. In a communication in preparation for oral proceedings, the Board drew attention to and commented on salient issues of the case.

VI. With its letter dated 13 August 2014, the Appellant submitted 4 sets of amended claims as the First to Fourth Auxiliary Requests, as well as Pages 114 and 115 of the textbook referred to in Appendix D (*supra*).

VII. Oral proceedings were held on 7 November 2014. The Appellant submitted the original photographs of Figures 4/16 and 5/16 of the present European patent application, and replaced all claim requests then on file with a sole (main) claim request made up of a single claim, reading as follows:

"*1. An unsupported multilayered microporous membrane having adjacent, inseparable, and integral retentive layers, wherein the membrane is free of: a dense interfacial layer between layers; and macrovoids; wherein all of the layers are asymmetrical.*".

The Appellant expressly dropped its pending request for reimbursement of the appeal fee pursuant to Rule 103(1) (a) EPC.

VIII. The Appellant requested that the decision under appeal be set aside and that the case be remitted to the Examining Division for further prosecution on the basis of the (Main) Request submitted during oral proceedings.

IX. The arguments of the Appellant of relevance here can be summarised as follows:

a) The sole claim request was clearly allowable, i.e. the amended claim was fairly based on the disclosure of the earlier application as filed and of the present application as filed (Articles 76(1) and 123(2) EPC) (page 5, first paragraph,

and page 10, lines 14-15, were referred to), and also clear (Article 84 EPC). In particular, concerning the expression "*dense layer*", the following was submitted:

i) The term "*layer*" indicated a planar part, extending across the whole area of the membrane, and affected the flow through or the permeability of the composite membrane.

ii) The term "*dense*" did not have an absolute meaning (in the sense of non-porous) but a relative meaning; it meant denser than adjacent layers, e.g. due to a greater density of polymer, so that some pores might be present but not as many as in the adjacent membrane layers. This higher polymer density, or lack of pores, could be seen from the original photographs of Figure 4/16, in which they appeared greyer and with less pores. At appropriate magnification, the pores could be counted. The greyer, i.e. denser, layers caused reduced permeability.

iii) The possible presence of a dense layer was derivable from the way the known membrane, e.g. D1, was formed. Moreover, by carrying out a flow analysis, as shown in the Wessling Affidavit, it would be possible to show whether a dense layer affected the normal (Poiseuille) linear relationship between flow and thickness.

b) The composite membrane of D1 mandatorily comprised a filtration layer having a symmetrical pore structure. Hence, the claimed composite membrane, comprising only asymmetrical layers, was clearly novel.

Reasons for the Decision

Admissibility of the claim request at issue

1.1 The claim request at issue was submitted during the oral proceedings before the Board.

1.1.1 The filing of this request can be considered as a reaction to objections expressed by the Board, namely that the feature "*free of skinning at the interface between the layers*" as such did not appear to have a direct and unambiguous basis in the parent and divisional applications as filed, and that the feature "*free of a dense interfacial layer between layers*" did not appear to necessarily distinguish the claimed membrane from the disclosure of D1.

The amendments made did not raise any further issue of particular complexity, and the amended claims overcome the previously pending objections under Articles 76(1), 123(2) and 84 EPC (*infra*).

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1.1.2 Therefore, the Board decided to admit the claim request at issue despite its late filing (Articles 114(2) EPC and 13(3) RPBA).

Allowability of the amendments

2. Since the present application is a divisional application of earlier European application no. 01939389.1 (corresponding to the PCT application published as WO 01/89673 A2; referred to as parent application as filed hereinafter), the subject-matter of the claims according to the request at issue must be directly and unambiguously derivable from both the

earlier (parent) and the divisional application as filed (Articles 76(1) and 123(2) EPC).

2.1 In the present case, the description and the subject-matter of the claims as contained in pages 1 to 19 of the parent application constitute the description (pages 1 to 19) of the present divisional application as filed. The present application differs in that in comprises new claims 1 to 30 (on pages 20 to 22). Thus, the parts of the parent application as filed referred to below correspond to identical parts comprised in the description of the present divisional application as filed .

2.2 Claim 1 according to the request under examination finds basis in the description on page 5, lines 1 to 5, which directly discloses the following features of claim 1 at issue: "*multilayered microporous membrane having adjacent, inseparable, and integral retentive layers, wherein the membrane is free of: a dense interfacial layer between layers; and macrovoids.*"

2.3 The remaining features of Claim 1 at issue, namely "*unsupported*" and "*wherein all of the layers are asymmetrical*", respectively find their basis in the following parts:

(a) page 6, first paragraph, second sentence, which disclosure is said to be applicable to all of the embodiments; see also page 7, second and third full paragraphs;

(b) page 10, third full paragraph, second sentence, which disclosure too is generally applicable, as also apparent from page 10, penultimate paragraph, last sentence; Figure 15; Claims 13, 21 and 25.

2.4 Therefore, Claim 1 according to the sole request meets the requirements of Articles 76(1) and 123(2) EPC.

Clarity

3. The present claim request overcomes the objections raised in the Board's communication, for the following reasons:

3.1 Feature "*free of a dense interfacial layer between layers*"

3.1.1 For the Board, the term "*layer*", in the context of a multilayer membrane, can only have the meaning of a structure extending across the whole planar extension of the membrane (page 7, last paragraph, of the present application as filed). In other words, a dense "*region*" is not to be equated to a dense "*layer*". This was no longer disputed during the oral proceedings.

3.1.2 The Board accepts that in the context of microporous membranes as claimed the expression "*dense layer*", as plausibly argued by the Appellant, has a broader meaning than the more absolute (and, for a microporous membrane, obviously contradictory) meaning "non-porous layer", i.e. containing no pores or no visible pores. It encompasses layers which are denser than adjacent layers and contain more polymer, thus less pores, than the adjacent layers, the higher density resulting in lower permeability, undesirably fast accumulation of particles, and thus reduced flux (see page 3, penultimate paragraph, fourth sentence; page 6, second paragraph, third sentence, of the application as filed).

3.1.3 Questioned by the Board, Professor Wessling

convincingly submitted, with reference to the original pictures submitted during the oral proceedings, that such a dense layer is visible, or can be made visible, upon appropriate magnification, on SEM pictures, and that even the pore number and/or density, relative to adjacent layers, can be determined therefrom. Provided the method used for the preparation of a given membrane was known, the presence of such a dense layer might be confirmed by permeation tests as illustrated in the affidavit.

3.2 Feature "*free of ... macrovoids*"

3.2.1 The occurrence of "*macrovoids*" is a generally known morphological phenomenon in the field of membranes preparation (see e.g. page 2, first paragraph, of the present application; Appendix D to the Wessling Affidavit).

3.2.2 Hence, the Board is satisfied that the feature "*free of macrovoids*" is sufficiently clear for a person skilled in the art of polymeric membranes in the sense that the presence/absence of macrovoids in a given membrane can be determined by the skilled person, in particular by analysis of SEM pictures.

3.3 Feature "*all of the layers are asymmetrical*"

The concept of "*asymmetric*" membranes or membrane layers is generally known in the art of membrane manufacture, and also extensively dealt with in the application as filed (page 10, third and fourth full paragraphs).

3.4 Therefore, in the Board's judgement, Claim 1 is clear (Article 84 EPC).

Novelty

4. D1 (Claim 1; page 2, line 66, to page 3, line 2) discloses a multi-layer, unsupported, integral microfiltration membrane made of a polymeric material suitable for a phase inversion process, said membrane comprising at least one final filtration layer having a thickness of from 50 to 300 micrometers and a **symmetrical** pore structure (emphasis added by the Board).

4.1 Hence, D1 does not disclose a multilayer membrane comprising asymmetric layers only, as required by claim 1 at issue.

4.2 The subject-matter of claim 1 is thus novel over the disclosure of D1 (Articles 52(1) and 54(1)(2) EPC).

5. No other document was dealt with in respect of novelty in the decision under appeal.

Remittal

6. The present claim request is clearly allowable under Articles 76(1), 123(2) and 84 EPC and overcomes the objection (lack of novelty over D1) that led to the decision to refuse the application.

Such a claim request was not yet assessed by the examining division as to its compliance with all the requirements of the EPC. In this respect, it is not apparent from the minutes of the oral proceedings before the Examining Division that the issues of sufficiency of disclosure and inventive step were actually debated.

Therefore, the Board considers it appropriate to make use of its discretionary power under Article 111(1) EPC (second sentence, second clause) to remit the case 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 Examining Division for further prosecution on the basis of the Main Request submitted during oral proceedings.

The Registrar: The Chairman:

D. Magliano B. Czech

Decision electronically authenticated