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Datasheet for the decision of 28 March 2007

Case Number: T 0179/03 - 3.3.07

Application Number: 95928362.3

Publication Number: 0772488

IPC: B01D 69/12

Language of the proceedings: EN

Title of invention:
Porous composite membrane and process

Patent Proprietors:
MILLIPORE CORPORATION

Opponents:
01: MEMBRANA GmbH
02: Eyles, Winifred Joyce

Headword:
-

Relevant legal provisions:
EPC Art. 54, 123(2)

Keyword:
"Amendments - added subject-matter (no) - (Final Main Request)"
"Novelty (no) - Product claim with process features - (Final Main Request)"

Decisions cited:
T 0150/82, T 0205/83, T 0815/93

Catchword:
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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0179/03 **-** 3.3.07

D E C I S I O N
of the Technical Board of Appeal 3.3.07
of 28 March 2007

Appellants: (Patent Proprietors)
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Representative:
-

Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 6 December 2002 revoking European patent No. 0772488 pursuant to Article 102(1) EPC.

Composition of the Board:

Chairman: S. Perryman
Members: G. Santavicca
B. Struif

Summary of Facts and Submissions

I. The appeal is against a decision of the Opposition Division to revoke European patent 0 772 488, which originates from international patent application PCT/US95/10080 published as WO-A-96/03202 and claiming a priority date of 28 July 1994. The independent claims as granted read as follows:

"1. A composite porous membrane which comprises a porous membrane substrate having an average pore size of between 0.01 and 10 microns, preferably between 0,05 and 5 microns, e.g. between 0.1 and 1.0 microns, formed of a first polymer, said substrate being directly coated over its entire surface by impregnation with a second polymer composition in a solvent which is crosslinked by exposing the impregnated substrate to ultraviolet light and/or mild heat and rendered insoluble in situ on said substrate with a free radical polymerization initiator, e.g. comprising a persulfate, and in the absence of a crosslinking agent, said composite porous membrane having essentially the same porous configuration as said porous membrane substrate."

"11. A process for forming a composite porous membrane having a porous membrane substrate formed of a first polymer with an average pore size of between 0.01 and 10 microns, preferably between 0.05 and 5.0 microns, and most preferably between 0.1 and 1.0 microns, said substrate being directly coated over its entire surface with a second polymer composition in a solvent which is crosslinked and rendered insoluble in situ on said substrate which comprises:

a) impregnating said substrate with a solution in said solvent of said second polymer and a free radical polymerization initiator, such as persulfate,
b) exposing the impregnated substrate from step a) to ultraviolet light and/or mild heat which effects a temperature of said solution between 45°C and 100°C to effect crosslinking of said second polymer, and to render said second polymer insoluble and
c) washing said impregnated substrate from step b) with a liquid to remove soluble polymer not rendered insoluble, excess polymerization initiator and reaction products of said polymerization initiator."

II. The European patent had been opposed on the grounds that the disclosure of the patent was insufficient (Article 100(b) EPC) (opponent 02) and that its claimed subject-matter lacked novelty and an inventive step (Article 100(a) EPC) (opponents 01 and 02) having regard ***inter alia*** to the following documents:

D1: EP-B-0 571 871;

D2: US-A-4 113 912;

D5: Kirk-Othmer, Encyclopedia of Chemical Technology, second completely revised edition, Volume 21, pages 427-440, John Wiley & Sons, 1970;

D6: EP-A-0 498 414;

E1: DE-A-4 217 335.

III. The decision under appeal was based on two sets of amended claims 1 to 25 filed with letter dated 26 September 2002 as the Main and the Auxiliary Requests.

The respective independent Claims 1 of those requests read as follows (emphasis added by the Board to show the amendments to the claims as granted):

Main Request

"1. A composite porous membrane which comprises a porous membrane substrate **having a hydrophobic surface and** an average pore size of between 0.01 and 10 microns, formed of a first polymer, said substrate being directly coated over its entire surface by impregnation with a second polymer composition in a solvent which is crosslinked by exposing the impregnated **surface** to ultraviolet light and/or mild heat and rendered insoluble in situ on said substrate with a free radical polymerization initiator and in the absence of a crosslinking agent, said composite porous membrane having essentially the same porous configuration as said porous membrane substrate."

Auxiliary Request

"1. A composite porous membrane which comprises a porous membrane substrate **having a hydrophobic surface and** an average pore size of between 0.01 and 10 microns, formed of a first polymer, said substrate being directly coated over its entire surface by impregnation

with a second polymer composition in a solvent which is crosslinked by exposing the impregnated **surface** to ultraviolet light and/or mild heat and rendered insoluble in situ on said substrate with a free radical polymerization initiator and in the absence of a crosslinking agent, said composite porous membrane having essentially the same porous configuration as said porous membrane substrate **and wherein said second polymer is a hydrophilic polymer**."

The Opposition Division revoked the patent for lack of an inventive step, on the basis of reasoning which can be summarised as follows:

(a) The ground of opposition under Article 100(b) EPC (insufficiency of disclosure) raised by opponent 02 lacked any indication of facts, evidence and arguments, and thus was rejected.

(b) As to novelty, D1 did not unambiguously disclose that the porous membrane substrate had a hydrophobic surface. According to D2, in which a temperature of 150° to 160°C, or even 200°C, was used to insolubilise the coating, a hot water step at a temperature below 100°C was necessary to replace the evaporated solvent in the coating. Thus, the feature "crosslinking by exposing the impregnated surface to ... mild heat", which implied that at a such low temperature degradation of the membrane would not take place, distinguished the claimed membrane from that of D2. D6 did not disclose a membrane prepared without using a crosslinking agent. Therefore, the subject-matter of independent Claim 1 according to

each of the Main and Auxiliary Requests was novel over the prior art described in any of D1, D2 and D6. Furthermore, there was no reason to believe that any of the other cited documents would destroy the novelty of any of the claims of the Main or the Auxiliary requests.

(c) As regards inventive step, D1 described the closest prior art. The only feature of Claim 1 according to the Main Request which was not shown in D1 was the "hydrophobic surface" of the porous membrane substrate and the only features according to Claim 1 of the Auxiliary Request which were not shown in D1 were the "hydrophobic surface" of the porous membrane substrate and the "second polymer is a hydrophilic polymer". However, D1 dealt with polysulfones, which polymers were hydrophobic, and taught that these polysulfones should be made permanently hydrophilic. Although D1 exemplified porous substrates having a partially hydrophilic surface, its teaching was not restricted to polysulfones having partly hydrophilic surfaces. Hence, for the skilled person starting from D1, it would be obvious to coat porous membrane substrates having a hydrophobic surface to obtain permanently hydrophilic membranes. Since permanently hydrophilic membranes were obtained from the examples of D1, the coating copolymers used in those examples, albeit containing a hydrophobic monomer, were nevertheless hydrophilic. Hence, the subject-matter of Claim 1 of each of the Main and the Auxiliary Requests did not involve an inventive step.

(d) Since therefore the ground of opposition under Article 100(a) EPC (lack of inventive step) prejudiced the maintenance of the patent in suit, that patent should be revoked.

IV. On 5 February 2003, the patent proprietors lodged an appeal against that decision and paid the appeal fee. In the statement setting out the grounds of appeal, received on 14 April 2003, the appellants enclosed a Declaration by Dr Moya dated 4 April 2003. Then, in response to a communication of the Board in preparation for the oral proceedings, the appellants submitted five sets of amended claims as Auxiliary Requests 2 to 6, as well as three documents concerning the definitions of the terms "hydrophobic" and "hydrophilic" (letter dated 28 February 2007).

V. In their response to the statement setting out the grounds of appeal, opponents 01 (herein after, respondents 01) maintained their position that the subject-matter of Claim 1 of each of the Main and Auxiliary Requests lacked novelty and an inventive step, argued against the Declaration by Dr Moya and submitted comparative test results concerning repetition of Example 4 of D1 (letter dated 31 October 2003).

VI. Opponent 02 (herein after, respondent 02) argued against the admissibility of the Declaration by Dr Moya filed with the statement setting out the grounds of appeal (letter dated 1 September 2003). Then, she announced that she would not attend the oral proceedings set by the Board (Letter dated 15 December 2006).

VII. In the communication in preparation for oral proceedings, the Board had *inter alia* made comments on the clarity of the alleged distinguishing feature of Claim 1 according to the Main Request, namely the feature "having a hydrophobic surface" that had been taken from the description, on the interpretation of the feature "hydrophilic polymer" present in Claim 1 according to the Auxiliary Request as well as on the test results submitted by appellants and respondents 01.

VIII. Oral proceedings were held on 28 March 2007. Respondent 02 did not appear, as announced in their letter dated 15 December 2006. Oral proceedings were continued without her, pursuant to Rule 71(2) EPC.

After a discussion with the parties, the Board expressed the preliminary view that the subject-matter of Claim 1 according to the Main Request lacked novelty over the membrane described in E1. The appellants withdrew the Auxiliary Request and asked that the discussion turn to Auxiliary Request 2. The Board noted that Claim 1 according to Auxiliary Request 2 lacked features present in Claim 1 as granted and thus would not appear to be admissible; even if those missing features were present, the feature "consist of hydrophilic polymer" did not appear to distinguish the claimed membrane from that described in E1. The appellants then submitted a fresh Auxiliary Request 3.

Respondents 01 submitted a copy of a document from BASF concerning the physical properties, in particular the water-solubility, of the copolymers for the coating exemplified in E1, namely: "BASF, Luviskol(R) VA Grades,

Technical Information, pages 1-19, May 1999" (hereinafter, D7).

After the Board had expressed the preliminary view that fresh Auxiliary Request 3 would not be acceptable because the amendments to Claim 1 still did not introduce any distinction of the claimed membrane from that described in E1 for the purpose of novelty and inventive step, the appellants did not maintain Auxiliary Requests 4 and 5 then on file but submitted a set of amended claims 1 to 17 identified as the Final Main request, as the sole request replacing all the requests then on file. Independent Claims 1 and 10 of the Final Main Request read as follows:

"1. A composite porous membrane which comprises a porous **hydrophobic** membrane substrate having an average pore size of between 0.01 and 10 microns, preferably between 0,05 and 5 microns, e.g. between 0.1 and 1.0 microns, formed of a first polymer, said substrate being directly coated over its entire surface by impregnation with a second polymer composition in a solvent which is crosslinked by exposing the impregnated substrate to ultraviolet light and/or mild heat and rendered insoluble in situ on said substrate with a free radical polymerization initiator, e.g. comprising a persulfate, and in the absence of a crosslinking agent, said composite porous membrane having essentially the same porous configuration as said porous membrane substrate **and wherein said second polymer is a hydrophillic** (sic) **polymer and said first polymer is selected from the group consisting of a halogenated hydrocarbon polymer, a nitrogen containing**

polymer and an olefin polymer." (Emphasis added by the Board to show the amendments to the claims as granted)

"10. A process for forming a composite porous membrane having a porous **hydrophobic** membrane substrate formed of a first polymer with an average pore size of between 0.01 and 10 microns, preferably between 0.05 and 5.0 microns, and most preferably between 0.1 and 1.0 microns, said substrate being directly coated over its entire surface with a second polymer composition in a solvent which is crosslinked and rendered insoluble in situ on said substrate which comprises:

a) impregnating said substrate with a solution in said solvent of said second polymer and a free radical polymerization initiator, such as persulfate,
b) exposing the impregnated substrate from step a) to ultraviolet light and/or mild heat which effects a temperature of said solution between 45°C and 100°C to effect crosslinking of said second polymer, and to render said second polymer insoluble and
c) washing said impregnated substrate from step b) with a liquid to remove soluble polymer not rendered insoluble, excess polymerization initiator and reaction products of said polymerization initiator,

wherein said second polymer is hydrophillic (sic) **and said solvent is water**." (Emphasis added by the Board)

IX. The appellants essentially argued as follows:

Procedural matters

In the decision under appeal, the patent was revoked for lack of an inventive step of the claimed subject-matter having regard to D1, which was a specification of a granted European patent. However, that patent specification had been published after the priority date of the patent in suit. E1, instead, cited by opponent 02, had been published before the priority date of the patent in suit, but its content was not the same as that of D1. In particular, passages of D1 referred to in the decision under appeal were not present in E1. Therefore, the decision to revoke the patent having regard to D1 was wrong. Consequently, D1 should be disregarded and the matter should be discussed having regard to E1.

Since D7 was late filed and late published, it should not be considered.

Final Main Request

(a) The amendments to the claims were based on the application as filed and the request was thus admissible.

(b) Since the expression "having a hydrophobic surface" was no longer present in the claims, the objection under Article 84 EPC as to clarity of that expression had been overcome.

(c) The subject-matter of Claim 1 was novel having regard to D2, because D2 disclosed crosslinking techniques such as high temperature, radiation and use of crosslinking agents, all of which produced higher degradation and higher amounts of extractable residues.

(d) As to inventive step, D2 described the closest prior art. The problem to be solved was how to produce a hydrophilic membrane starting from a hydrophobic substrate while reducing the extractables and avoiding degradation of the membrane in its formation. According to the statements in the patent in suit, that problem had been solved. The opponents had not denied it. D2 did not contain any hint at changing its crosslinking technique toward the less degrading technique disclosed in the patent in suit. Even if the problem had not been solved, D2 did not teach to move away from the means of crosslinking disclosed. The further documents cited such as E1 concerned a different substrate and would not be combined with D2. Hence, the subject-matter of Claim 1 involved an inventive step.

(e) As regards the subject-matter of Claim 10, the closest prior art was described in E1, which concerned substrates made of polysulfone that should be made permanently hydrophilic. Although E1 acknowledged that polysulfone was hydrophobic, to make it permanently hydrophilic its surface should at least be made partially hydrophilic before coating. Furthermore, since the copolymer used in the coating solution described in E1 should be

dissolved in a mixture of water and alcohol, it was not water-soluble. This was also apparent from D5, which showed that copolymers such as those used in E1 were commercially available in alcoholic solution. In any case, it had been shown by the appellants that the process of E1 did not work on polyethylene. Therefore, also the subject-matter of Claim 10 involved an inventive step.

(f) In summary, the amended patent fulfilled the requirements of the EPC.

X. Respondents 01 essentially argued as follows:

Procedural matters

Respondents 01 did not object to discuss the matter having regard to E1 instead of D1.

D7 was in reaction to the arguments submitted by the appellants on the coating solution disclosed in E1, it was highly relevant and should thus be admitted in the proceedings.

Final Main Request

(a) The amendments to the claims were not objected to.

(b) After the deletion of the feature "having a hydrophobic surface" from the claims, clarity under Article 84 EPC was no longer an issue.

(c) E1 was no longer relevant for the novelty of the subject-matter of Claim 1. However, there was no

evidence that the product as claimed differed from the product of D2 in any measurable property. Hence, the product as defined in Claim 1 was not novel over D2.

(d) If the product of Claim 1 was found to be novel, D2 would be the closest prior art document. The problem to be solved would be how to produce a hydrophilic membrane starting from a hydrophobic substrate while reducing degradation and formation of extractable residues during the manufacture. There was no proof over D2, such as comparative examples, that that problem had been solved. Hence, the problem should be reformulated as to provide a further product. The coating copolymer composition described in E1 should impart a hydrophilic character to the polysulfone substrate and hence it must be hydrophilic. Apart that E1 did not exclude hydrophilic copolymers, any copolymer containing relatively small proportion of a hydrophobic monomer still was hydrophilic, independently from the fact that the exemplified copolymer of E1 was dissolved in a water-alcohol mixture. In that respect, Claim 6 of the granted patent in suit did not exclude the presence of further monomers which might be hydrophobic. Since E1 hinted at a coating process that permitted to obtain less degradation and residues, the claimed subject-matter was obvious having regard to the combination of D2 with E1. Also the further documents cited such as D5 contained hints at moving towards the process of the patent in suit. Hence, the subject-matter of Claim 1, if novel, would not involve an inventive step.

(e) E1 was still relevant to the process defined in Claim 10. The only distinguishing features of the process defined in Claim 10, compared to that of E1, were the final washing step and the choice of water as a solvent. Since the membranes of E1 should inter alia be suitable for the filtration of drinking liquids and pharmaceutical products, a final washing step before use was imperative. Furthermore, it was apparent from E1 that the addition of the alcohol was necessary only as far as any substantial turbidity of the aqueous coating solution arose. Therefore, the process of Claim 10 was obvious having regard to that of E1.

(f) The claimed subject-matter did not fulfil the requirements of the EPC and the patent in suit should be revoked.

XI. The appellants (patent proprietors) requested that the decision under appeal be set aside and that the patent be maintained on the basis of the Final Main Request submitted at the oral proceedings on 28 March 2007.

XII. Respondents 01 (opponents 01) requested that the appeal be dismissed.

XIII. Respondent 02 had requested in writing the dismissal of the appeal. She had additionally made the procedural request that the Declaration by Dr Wilson Moya dated 4 April 2003 filed by the appellants (patent proprietors) with their statement setting out the grounds of appeal not be admitted. If the Board were to admit this Declaration, then the case should be

remitted back to the Opposition Division for a fresh decision, so that the right of appeal of opponent 02 be guaranteed, if the Opposition Division decided, on the basis of the newly filed evidence, to maintain the patent (letter dated 1 September 2003).

Reasons for the Decision

1. The appeal is admissible.

Final Main request

2. *Amendments*

At the oral proceedings before the Board, the appellants have indicated the basis in the application as filed for the amendments to the claims of the Final Main Request, as follows: Claims 1, 2, 22, 28 and 30, and description, page 6, line 27, and page 7, line 9, for Claim 1; Claims 35 and 36 for Claim 10. Respondents 01 did not contest the allowability of the claims of the Final Main Request. The Board has no reason to take a different position.

3. *Novelty*

3.1 D2 is acknowledged in the priority document (page 3, first paragraph), in the application as filed (page 3, lines 7 to 23) and in the patent in suit as well (paragraph [0006]) as describing the closest prior art.

3.2 D2 discloses a hydrophilic porous structure comprising a porous fluorocarbon resin structure with the pores of the fluorocarbon resin structure containing at least one water-insolubilized water-soluble polymer (Claim 1).

In that structure, the water-insolubilized polymer can be partly or wholly crosslinked to form a microporous swollen gel (Claim 2).

The water-soluble polymer can be: a hydroxyl group-containing polymer (Claim 3), such as polyvinyl alcohol (Claim 5); a carboxyl group-containing polymer (Claim 7), such as polyacrylic acid (Claim 9); a nitrogen containing polymer (Claim 11), such as polyacrylamide (Claim 13) or polyvinylpyrrolidone (Claim 15); or even a mixture of a hydroxyl group-containing polymer and a carboxyl group-containing polymer (Claim 17) or of a hydroxyl group-containing polymer and a nitrogen-containing polymer (Claim 19).

The porous fluorocarbon resin structure can be a porous polytetrafluoroethylene structure (Claim 21), such as porous polytetrafluoroethylene having a microstructure containing nodes connected to one another by fibers (Claim 23), or a porous polyvinylidene fluoride structure (Claim 25).

D2 also discloses a process for producing the porous structure, which comprises impregnating the pores of a porous fluorocarbon resin with at least one water-soluble polymer including polyvinyl alcohol, and water-insolubilizing the polyvinyl alcohol by heat-treatment (Claim 27).

Insolubilization by heat-treatment is effective on completely saponified polyvinyl alcohol, and can be achieved by heating at about 150° to 160°C, for about 4 to 6 minutes, or at 200°C, for about 1 minute. At this time, the heat-treated product is preferably treated with hot water at about 90°C or higher for at least 5 minutes. By heat-treatment, polyvinyl alcohol adheres intimately to the matrix of the porous structure and is crosslinked into a gelled structure. Thus, the porosity of the treated porous structure slightly decreases depending on the concentration of the polyvinyl alcohol impregnated or coated. However, the pore size of the structure and especially the maximum pore size and pore size distribution of the structure are scarcely different from those of the matrix structure in the starting material. For this reason, its permeability characteristics and mechanical characteristics as filter membranes are much the same as those of the starting material, and the range of applications of the resulting product to water and aqueous solutions can be broadened (D2, paragraph bridging columns 5 and 6).

In Example 1 of D2, insolubilization by heat-treatment. is carried out on a polytetrafluoroethylene membrane with an average pore size of 5 micrometers. The membrane was immersed in isopropyl alcohol, and then in water. Separately, aqueous solutions of PVA-217 polymer (average degree of polymerization 1,750; degree of saponification 88 mole %; tradename for a product of Kuraray Co., Ltd.) in a concentration of 1.25, 2.5, 5, and 10% by weight respectively, were prepared. Portions of the membrane immersed in water were immersed in each of the aqueous solutions of polyvinyl alcohol. One surface or both surfaces of the membrane were immersed.

Each of the immersed structures was intimately contacted with the surface of a metallic drum, and in this condition heat-treated at 90°C for 20 minutes and then at 210°C for 15 minutes. Finally, the heat-treated products were each treated for 10 minutes in hot water at 90°C. The characteristics of the membranes obtained, are given in Table 1 of Example 1 of D2, wherein a number of properties are shown, such as the bubble point (determined by the method of ASTM F316-70), i.e. the pressure at which the first bubble passes through the membrane after wetting the membrane with isopropyl alcohol, and the water permeation time, which is the time required for 1 litre of distilled water to pass through a 40 mmΦ effective area with a pressure difference of 70 cmHg.

3.3 As regards substrate material, polytetrafluoroethylene, coating material, PVA, pore size, absence of a cross-linking agent and the essentially same porous configuration as the porous membrane substrate, the porous membrane described in Example 1 of D2 meets all the requirements of Claim 1. Any possible difference could only be attributable to the fact that D2 describes heat treatment at 210°C for 15 minutes to cross-link the PVA on the substrate and insolubilize it in situ, whereas Claim 1 refers only doing this by exposing to ultraviolet light and/or mild heat (defined as less than 100°C) with a free radical polymerisation initiator.

3.4 The use of these mild heating conditions was acknowledged as a distinguishing feature of the claimed subject-matter from that of D2 in the decision under appeal (point 3.2 of the Reasons).

3.5 However, Claim 1 concerns a product and the alleged distinguishing feature does not concern the composition or the structure of the product (product feature) but the operational conditions used in the process of manufacture of that product (process feature). Also, process features not described in the cited prior art do not necessarily cause the resulting product to be structurally different from the known product. Thus, the conclusion of the opposition division that the claimed product was novel having regard to D2 because of the different process features has to be reviewed.

3.6 In particular, it is necessary to consider whether on the law applicable and the available evidence, novelty of Claim 1 can be acknowledged.

3.7 In T 150/82 (OJ EPO 1984, 309; see point 9) it was stated that for claims for products defined in terms of a process of manufacture to be allowable their patentability as products must be established since such definition is in lieu of the normal definition by structure.

3.8 In T 205/83 (OJ EPO 1985, 363; see Reasons 3.2.1, points 2 and 3), in a case where the only difference between the claimed subject matter and the prior art mentioned in the claim was the reference in the claim to particular process parameters having been used, this line of argument was further developed by saying: "To establish novelty, it will be necessary to provide evidence that modification of the process parameters results in other products. In principle such evidence could conceivably be provided in a variety of ways, for

example on the basis of conclusive considerations which accord with the general state of the art. It is also sufficient, however, if distinct differences in the products' properties are demonstrated; this is because, according to an empirical principle in chemistry, a product's properties are determined by its structure, so that differences in the properties of products indicate a structural modification."

3.9 Following these cases, the established case law of the Boards of Appeal is that a process feature can only contribute to the novelty of a product claim insofar as it gives rise to a distinct and identifiable characteristic of the product, and that the burden of proof of showing this is on the applicant/patentee, see for example T 815/93 of 19 June 1996 (not published in the OJ EPO) and the Case Law of the Boards of Appeal (5th edition, 2006, Section I.C.3.2.7). This established case law is also reflected in the Guidelines for Examination.

3.10 The patent in suit contains no examples where the substrate is polytetrafluoroethylene, nor is there any other evidence before the Board relating what difference, if any, there might be between porous membrane with a substrate made from polytetrafluoroethylene and a coating of PVA using a method as defined in the claim, and a porous membrane according to Example 1 of D2.

3.11 The appellants have referred to a passage in the description of the patent in suit commenting the disclosure of D2 and reading: "The use of these high temperatures (i.e. those of D2), while necessary to

effect crosslinking are undesirable since they can cause degradation of the substrate, particularly low melting substrates such as polyethylene" (page 2, lines 50-52). Based on this passage, they have been contending for a particular physical meaning to be given to the distinguishing process features defined in Claim 1, namely that the membranes obtainable thereby do not exhibit degradation, hence degraded extractable products, or do not develop extractable material, compared to the membranes of D2.

3.12 According to the patent in suit, to avoid a degradation of the membrane when crosslinking the coating polymeric composition, mild heat and a free radical polymerization initiator should be used. When utilizing water as the solvent, mild heat means a temperature below about 100°C. The use of a polymerization initiator permits utilizing these mild heating conditions (page 4, lines 2-11).

3.13 In view of the fact that D2 describes how successfully to make porous membranes with a substrate of polytetrafluoroethylene using a crosslinking temperature of 200°C, and that it is known that polytetrafluoroethylene has a much higher melting point than polyethylene, the Board cannot see however this as case where conclusive considerations which accord with the general state of the art would allow the Board to presume, in the absence of evidence, that a membrane according to D2 would necessarily exhibit measurable degradation and thus be distinguishable from the subject matter of Claim 1.

3.14 Since the burden of proof of showing that the process features in Claim 1 relied on indeed serve to define a novel product over the porous membrane of Example 1 of D2, is on the appellant proprietor to show and has not been discharged, the Board must conclude that the composite membrane disclosed in D2 destroys the novelty of the composite membrane defined in Claim 1, and already for this reason the Final Main Request must be refused.

4. On the question of whether the process of manufacture of the composite membrane defined in Claim 10, which still encompasses the use of polysulfone substrates, involves an inventive step having regard to the process of manufacture described in E1, it suffices to state that the only features not considered to be explicitly disclosed in E1 - namely, "c) washing said impregnated substrate from step b) with a liquid to remove soluble polymer not rendered insoluble, excess polymerization initiator and reaction products of said polymerization initiator" and "said solvent is water" are considered, respectively, as a step that the skilled man would routinely take to make the product immediately serviceable for uses in the filtration of medical or food products, and as an obvious choice having regard to the process of E1 which uses a water solution of a hydrophilic and hydrophilic-hydrophobic copolymer, to which alcohol is only added as a solvent-aid in a quantity as necessary for the solution to be essentially free of turbidity, if any. Thus, the subject matter of claim 10 does not involve an inventive step having regard to E1.

5. In view of the above conclusions, it is not necessary for the Board to decide whether document D7 may be admitted into the proceedings.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Counillon S. Perryman