

**Internal distribution code:**

- (A) [ ] Publication in OJ  
(B) [ ] To Chairmen and Members  
(C) [X] To Chairmen  
(D) [ ] No distribution

**D E C I S I O N**  
**of 31 May 2001**

**Case Number:** T 0685/99 - 3.3.3

**Application Number:** 90905902.4

**Publication Number:** 0463106

**IPC:** C08L 27/18

**Language of the proceedings:** EN

**Title of invention:**  
Polytetrafluoroethylene film

**Patentee:**  
W. L. Gore & Associates, Inc.

**Opponent:**  
Rogers Corporation

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 54, 56, 123(2)

**Keyword:**  
"Implicit disclosure (yes)"  
"Novelty (yes)"  
"Inventive step (yes)"

**Decisions cited:**  
-

**Catchword:**  
-



Case Number: T 0685/99 - 3.3.3

**D E C I S I O N**  
**of the Technical Board of Appeal 3.3.3**  
**of 31 May 2001**

**Appellant:** W. L. Gore & Associates, Inc.  
(Proprietor of the patent) 551 Paper Mill Road  
P.O. Box 9206  
Newark  
Delaware 19714-9206 (US)

**Representative:** Horner, Martin Grenville  
Cruikshank & Fairweather  
19 Royal Exchange Square  
Glasgow G1 3AE  
Scotland (GB)

**Respondent:** Rogers Corporation  
(Opponent) Main Street  
Rogers, Conn. 06263 (US)

**Representative:** Freylinger, Ernest T.  
Office Ernest T. Freylinger S.A.  
234, route d'Arlon  
Boîte Postale 48  
8001 Strassen (LU)

**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 3 May 1999 revoking  
European patent No. 0 463 106 pursuant to  
Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** R. Young  
**Members:** C. Idez  
J. De Preter

## Summary of Facts and Submissions

- I. The grant of European patent No. 0 463 106 in respect of European patent application No. 90 905 902.4, based on International patent application No. PCT/US90/01236, filed on 7 March 1990, and claiming priority of the earlier US patent application No. 324 166 of 16 March 1989, was announced on 16 February 1994 (Bulletin 94/07) on the basis of 16 claims.

Claim 1 as granted read as follows:

"A thin film of filled polytetrafluoroethylene that:

- a) contains 25-85 volume percent particulate filler,
- b) has a film thickness of between 2.5 and 127  $\mu\text{m}$  (0.1 and 5 mil), and
- c) is substantially free of visual pinholes."

Dependent Claims 2 to 15 referred to preferred embodiments of the film according to Claim 1.

Independent Claim 16 read as follows:

"Process comprising:

- a) mixing 25-85 volume percent particulate filler of an average size of 40 micron or less with polytetrafluoroethylene in aqueous dispersion,
- b) cocoagulating the filler and the polytetrafluoroethylene,

- c) lubricating the filled polytetrafluoroethylene with lubricant,
- d) (i) calendering or (ii) paste extruding and optionally calendering, to form a film,
- e) expanding said film by stretching it as to form a porous polytetrafluoroethylene having said filler distributed therein;
- f) densifying the stretched material by compressing it until a desired thickness is obtained."

II. On 14 November 1994, a Notice of Opposition was lodged in which revocation of the patent in its entirety was requested on the grounds set out in Article 100(a) EPC (lack of novelty and lack of inventive step) and Article 100(b) EPC (insufficiency). The opposition was supported, inter alia, by the following documents:

D1: EP-A-0 279 769;

D2: US-A-4 355 180;

D3: US-A-3 953 566;

D4: US-A-4 518 737; and

E1: Affidavit of Dr. Allen F. Horn III dated 4 November 1994, referring to the products RO 2800, R0 2810 and RT Duroid 6010; as well as the later filed, but admitted

E13: Certified copy of material data sheet for RT Duroid 6010, dated December 1988.

III. By a decision announced orally on 14 April 1999 and issued in writing on 3 May 1999, the Opposition Division revoked the patent. The decision was based on a main request and one auxiliary request both submitted during the oral proceedings held on 14 April 1999. Claim 1 of the main request read as follows:

"A thin densified film of filled polytetrafluoroethylene obtainable from expanded polytetrafluoroethylene having a void volume and in which said film

- (a) a [sic] contains 25-85 volume percent particulate filler,
- (b) has a film thickness of between 2.5 and 127  $\mu\text{m}$  (0.1 and 5 mil), and
- (c) is substantially free of visual pinholes."

Claim 1 of the auxiliary request read as follows:

"A thin densified film of filled polytetrafluoroethylene produced from expanded polytetrafluoroethylene and in which said film

- (i) a [sic] contains 25-85 volume percent particulate filler,
- (ii) has a film thickness of between 2.5 and 127  $\mu\text{m}$  (0.1 and 5 mil), and
- (iii) is substantially free of visual pinholes, and said film is obtainable by a process which includes the steps of (a) expanding an unexpanded film by stretching it to form a porous polytetrafluoroethylene and (b) densifying the stretched material until a desired thickness is obtained."

According to the decision, Claim 1 of both requests

lacked novelty in view of document D1 and in view of the prior use of products RO 2800 and RO 2810 manufactured and sold by the Opponent before the priority date of the patent in suit. More specifically the decision held that the Patent Proprietor had failed to demonstrate that the process features related to the expansion of the polytetrafluoroethylene (PTFE) led to any determinable difference in the final thin densified film of filled PTFE in comparison to the filled PTFE film disclosed in table 4 of D1 and to the products RO 2800 and RO 2810 which were in fact produced in the same way as the films disclosed in D1.

IV. On 30 June 1999 a Notice of Appeal was lodged by the Patent Proprietor against this decision. The prescribed fee had been paid on 23 June 1999.

With the Statement of Grounds of Appeal filed on 3 September 1999, the Appellant submitted a set of 17 claims as main request and an Affidavit by Mr. William P. Mortimer Jr. dated 2 September 1999 comprising two photographs (A) and (B), respectively, showing the surface of a film according to the patent in suit and the surface of a film according to D1. Claim 1 of this request read as follows:

"A thin densified film of filled polytetrafluoroethylene having a structure comprising nodes interconnected by fibrils and which said film:

(a) contains 25-85 volume percent particulate filler,

(b) has a film thickness of between 2.5 and 127  $\mu\text{m}$  (0.1 and 5 mil), and

(c) is substantially free of visual pinholes."

Independent Claim 2 differed from Claim 1 of the main request on which the decision under appeal was based, only by the deletion of the expression "having a void volume" after "expanded polytetrafluoroethylene".

Claims 3 to 16 referred to preferred embodiments of the films in the ambit of the films according to Claims 1 or 2. Independent process Claim 17 corresponded to Claim 16 as granted.

With its letter dated 20 January 2000, the Appellant further submitted two photographs (C) and (D) in order to illustrate more clearly the differences between the films already shown by the photographs (A) and (B).

Its arguments could be summarized as follows:

- (i) The product claim was directed to a thin densified film of filled expanded PTFE and the analysis of the finished product showed that it incorporated densified nodes and fibrils indicative of expanded PTFE. This statement was supported by the comparative tests disclosed in the Affidavit of Mr. P. Mortimer Jr.
- (ii) Furthermore, the films according to the patent in suit had clear benefits in that they enabled the production of films, which were thinner than was achievable by the prior art process (i.e. the process used for making the products of D1). The films also exhibited greater strength as compared to non-expanded PTFE.
- (iii) The disclosure of D1 read in combination with D2 to which it referred was not an enabling prior

disclosure, since there was no teaching of how to produce the filler having a mean particle size between 10 and 15 micrometers and no particle greater or equal to 30 micrometers, and since the layering step or the calendering step were not sufficiently disclosed. Thus D1 could not be considered as a novelty destroying document.

V. With its letter dated 15 May 2000, the Respondent (Opponent) filed a new document D3' (US-A-4096 227) and two Affidavits, one by Dr. Allen F. Horn III and the other by Mr. John Brookes. It also argued essentially as follows:

- (i) The filing of new items of evidence (i.e. the comparative tests disclosed in the Affidavit of Mr. Mortimer) only at this late stage of the procedure, although such tests had been requested on several occasions by the Opposition Division, represented a clear abuse of procedure. These comparative tests should therefore be disregarded by the Board.
- (ii) The new set of claims submitted by the Patent Proprietor comprised two independent product claims, giving two different definitions of the claimed film and therefore contravened Article 84 EPC.
- (iii) The arguments of the Appellant concerning the non-enabling disclosure of D1 and D2 could not be accepted, since the filler used in the manufacture of the film described on page 12 of D1 was a commercially available one (cf.



Affidavits of Dr. Allen Horn and of Mr. John Brookes) and since the person skilled in the art would only have had to do some tests in order to optimise the calendering parameters.

- (iv) The tests submitted by Mr. Mortimer were not suitable to demonstrate the effect of the expansion step, since the tests did not differ exclusively by an expansion step.
- (v) The new photographs (C) and (D) could not be considered as actual evidence in support of the tests of Mr. Mortimer. Furthermore, a clear identification of a structure of nodes interconnected by fibrils was not possible on photograph (C). This was also the case with original Figure 5 of the patent, which represented a film after densification.
- (vi) The novelty of Claim 1 of the set of claims submitted with the Statements of Grounds of Appeal could be acknowledged, since this claim recited the structural feature "having a structure comprising nodes interconnected by fibrils" but the subject-matter of this claim lacked inventive step for the following reasons:
  - (vi.a) D1 represented the closest prior art, since it disclosed a thin PTFE film having a thickness of 38  $\mu\text{m}$ , containing 62 volume percent of a particulate filler and free of pinholes.
  - (vi.b) Starting from D1 the technical problem might be seen to confer a higher matrix tensile strength

to films of D1.

(vi.c) D3', which was a divisional application of D3, clearly related to filled PTFE products. It taught that the strength of filled PTFE film could be increased by stretching the extruded filled film. Furthermore, D3' also disclosed that dense films of very high strength might be produced by compressing the porous films.

(vi.d) Thus, the person skilled in the art would inevitably be prompted to expand the filled extruded PTFE film as taught in D3' prior to calendering and would also control the filler particle size as taught in D1 in order to avoid pinholes and tears during the final calendering step.

VI. With letter dated 18 May 2001, the Appellant submitted a set of 16 claims as new main request. This set of claims differed from the set of claims submitted with the Statement of Grounds of Appeal in that independent Claim 2 had been deleted, that the remaining claims had been renumbered accordingly and that the expression "having a structure comprising nodes interconnected by fibrils and" had been inserted between "porous polytetrafluoroethylene" and "having said filler distributed therein" in step e) of the independent process claim.

VII. With a fax dated 25 May 2001, the Respondent indicated that it had no objection to the grant of a patent on the basis of the main request of the Appellant (i.e. the set of Claims 1 to 16 submitted on 18 May 2001) and that it would not attend the oral proceedings scheduled

for 31 May 2001.

VIII. At the oral proceedings held on 31 May 2001, which were not attended by the Respondent, the Appellant submitted a set of 15 claims as new main request.

Claim 1 of the main request reads as follows:

"A thin densified film of filled polytetrafluoroethylene having a structure comprising nodes interconnected by fibrils said film being obtainable from expanded polytetrafluoroethylene having a structure comprising nodes interconnected by fibrils and in which said film:

- (a) contains 25-85 volume percent particulate filler;
- (b) has a film thickness of between 2.5 and 127  $\mu\text{m}$  (0.1 and 5 mil);
- (c) is substantially free of visual pinholes, and
- (d) has an unsintered matrix tensile strength of at least 246  $\text{kg}/\text{cm}^2$  (3500 psi)."

Dependent claims 2 to 14 refer to preferred features of the film according to Claim 1.

Independent process Claim 15 reads as follows:

"Process comprising:

- a) mixing 25-85 volume percent particulate filler of an average size of 40 micron or less with polytetrafluoroethylene in aqueous dispersion,

- b) cocoagulating the filler and the polytetrafluoroethylene,
- c) lubricating the filled polytetrafluoroethylene with lubricant,
- d) (i) calendering or (ii) paste extruding and optionally calendering, to form a film,
- e) expanding said film by stretching it so as to form a porous polytetrafluoroethylene having a structure comprising nodes interconnected by fibrils and having said filler distributed therein,
- f) densifying the stretched material by compressing it until a thickness of between 2.5 and 127  $\mu\text{m}$  (0.1 and 5 mil) is obtained, whereby said film has an unsintered matrix tensile strength of at least 246  $\text{kg}/\text{cm}^2$  (3500 psi) and is substantially free of visual pinholes."

Concerning the patentability of this main request the Appellant essentially referred to the arguments presented in the Statement of Grounds of Appeal and in its letter of 20 January 2000.

The Appellant requested that the decision under appeal be set aside and the patent be maintained on the basis of Claims 1 to 15 as submitted during the oral proceedings.

## **Reasons for the Decision**

1. The appeal is admissible.
  
2. *Procedural Matters*
  - 2.1 As mentioned above, the Respondent indicated in the fax dated 25 May 2001 that it would not be represented at the oral proceedings. In accordance with Rule 71(2) EPC, the proceedings therefore continued without the Respondent.
  
  - 2.2 The second point concerns the late filed documents, i.e. D3' submitted with letter of 15 May 2000 of the Respondent, the Affidavit of Mr. William P. Mortimer Jr. and photographs (A) and (B) annexed thereto submitted with the Statement of Grounds of Appeal, the photographs (C) and (D) submitted with letter of 20 January 2000 of the Appellant and the Affidavits of Dr. Allen F. Horn III and of Mr. John Brookes both submitted with letter of 15 May 2000 of the Respondent.
  
  - 2.3 Although the Board was of the preliminary opinion that only the Affidavit of Mr Mortimer, the photographs (A), (B), (C) and (D) and the Affidavits of Dr Horn and Mr Brookes might be sufficiently relevant to be admitted in the procedure, this point turned out not to be decisive for the outcome of the appeal for the following reasons.

- 2.3.1 The Appellant had submitted the Affidavit of Mr. P. Mortimer and the photographs A, B, C and D, in order to show that the expansion step led to a structure comprising nodes interconnected by fibrils in the densified product.
- 2.3.2 Since this feature has been incorporated in Claim 1 of the main request submitted during the oral proceedings and since the presence of this structure in the densified product is no longer contested by the Respondent (cf. fax dated 25 May 2001 of the Respondent), there was no need to discuss this Affidavit and the photographs nor, consequently, the Affidavits of Dr. Horn and Mr. Brookes both filed by the Respondent in reaction to the Affidavit of Mr. Mortimer.
- 2.3.3 Consequently, none of the late-filed documents was admitted to the proceedings (Article 114(2) EPC).

*Main Request*

3. *Admissibility of amendments*

- 3.1 Claim 1 differs from Claim 1 as originally filed by (a) the insertion of the adjective "densified" between "thin" and "film", (b) the incorporation of the expression "having a structure comprising nodes interconnected by fibrils" after "filled polytetrafluoroethylene", (c) the incorporation of the feature "said film being obtainable from expanded polytetrafluoroethylene having a structure comprising nodes interconnected by fibrils", and (d) the indication that the claimed film has an unsintered matrix tensile strength of at least 246 kg/cm<sup>2</sup> (3500

psi).

3.2 Amendments (a) and (d) are supported by lines 1 to 6 on page 5 of the application as originally filed and meet therefore the requirements of Article 123(2) EPC.

3.3 No objection under Article 123(2) EPC arises from amendment (b) which is supported by lines 12 to 15 on page 3 of the application as originally filed.

3.4 There is, however, no explicit support in the application as originally filed for the amendment (c) since it is not explicitly stated in the patent in suit itself that the structure comprising nodes interconnected by fibrils, which results from the expansion step, is retained after the densification step.

3.5 Thus, the question to be considered is whether the overall change in the patent originating from this amendment is directly and unambiguously derivable from the information presented by the content of the application as originally filed, when account is taken of matter which is implicit to a person skilled in the art in what has been expressly mentioned.

3.6 The passage on page 3, lines 15 to 17 of the application as filed refers to the US-A-3 953 566 (i.e. D3) for the preparation of the expanded PTFE. In view of this document and as pointed out by the Appellant during the oral proceedings, it is evident that it is the specific structure comprising nodes interconnected by fibrils which is responsible for the high strength of the PTFE products both in porous (expanded) and dense (expanded and densified) forms (cf. D3, column 1,

lines 25 to 31; column 2, line 52 to column 3, line 3; column 21, lines 30 to 48). Since the aim of the application as originally filed (cf. page 5, lines 2 to 6) was the provision of thin films having high tensile strength (i.e. as reflected by an unsintered matrix tensile strength of at least 3500 psi), and since, as evidenced in D3, this property is unequivocally related to the presence of the specific structure comprising nodes interconnected by fibrils obtained after expansion in the PTFE product, amendment (c) is directly and unambiguously derivable from the information contained in the application as originally filed, and does not contravene Article 123(2) EPC.

3.7 Dependent Claims 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, and 14 are respectively supported by Claims 3, 4, 5, 7, 8, 9, 10, 11 (in combination with Claim 1), 12, 13, 14 and 15 of the application as originally filed. Support for dependent Claim 5 is to be found on page 5, lines 11 to 12 of the application as originally filed.

3.8 Independent process Claim 15 differs from the corresponding process Claim 16 as originally filed by (a) the indication in step e) that the porous PTFE has a structure comprising nodes interconnected by fibrils and (b) the mention of characteristics of the densified film obtained in terms of thickness (i.e. between 2.5 to 127  $\mu\text{m}$  (0.1 and 5 mil)), unsintered matrix tensile strength (i.e. at least 246  $\text{kg}/\text{cm}^2$  (3500 psi)) and absence of visual pinholes.

3.9 Amendment (a) is supported by lines 12 to 15, and lines 30 to 33 on page 3 of the application as originally filed while amendment (b) finds a support on page 4, lines 32 to 33 and page 5, lines 1 to 6.



3.10 Thus, Claims 1 to 15 are allowable under the provisions of Article 123(2) EPC.

3.11 The amendments carried out in independent Claims 1 and 15, which merely specify the structure of the polytetrafluoroethylene and the properties of the film, do not extend the scope of protection in respect to the independent Claims 1 and 16 as granted, so that Article 123(3) EPC is also complied with.

3.12 The amendments to the claims do not introduce any unclarities. Accordingly, the requirements of Article 84 EPC are complied with.

#### 4. *Sufficiency*

4.1 In its Notice of Opposition, the Respondent has stated that the patent in suit does not disclose the claimed invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art, but has not submitted detailed arguments in that respect. Nevertheless, it would appear from the submissions of the Respondent in paragraph C3 of the Notice of Opposition, that this objection was based on the fact that the maximum filler content disclosed in the Examples of the patent in suit was merely 56% (cf. Example 2) and that the exemplified film having the lowest thickness (cf. Example 1) merely contains 28% filler, i.e. well under the upper limit of 85% defined in the claims.

4.2 Independently of the fact that Rule 27(e) EPC does not require examples, let alone define what might constitute the sufficient number thereof (cf. Rule 27(e) EPC, "using examples where appropriate"),

the patent in suit in fact provides precise information regarding the processing conditions (cf. page 3, lines 32 to 54, page 4, lines 13 to 15; Examples 1 to 5), so that there can be no doubt that a skilled reader would know how to prepare a film within the terms of the patent in suit. It follows that the requirements of Article 83 EPC must be regarded as met and hence that the ground of opposition under Article 100(b) EPC has not been substantiated.

5. *Novelty*

5.1 The documents considered in the opposition procedure can be summarized as follows.

5.1.1 D1 discloses an electrical substrate material comprising fluoropolymeric material and a ceramic filler having a low dielectric constant, low loss and low coefficient of thermal expansion, the ceramic filler being in an amount of at least 55 weight percent of the total substrate material, and the ceramic filler being coated with a silane coating. At least one layer of conductive material may be disposed on at least a portion of the electrical substrate material (cf. D1, Claims 1, 12). Table 4 of D1 discloses PTFE films having a thickness of 0.038 mm (0.0015 inch) and comprising 62 % of a ceramic filler. This table shows that only the sample comprising a ceramic filler from which all particles equal or greater than 30  $\mu\text{m}$  have been removed, and furthermore containing no glass fiber is free of pinholes. The process for making these electrical substrate materials is essentially the same as the manufacturing process disclosed in D2 (cf. D1, page 4, lines 55 to 59). D1 neither discloses the use of expanded PTFE nor the matrix tensile strength (MTS)

of the films.

5.1.2 D2 relates to microwave circuit boards comprising a sheet of dielectric material having conductive foil clad to one and usually both sides of the sheet. In the process for making the dielectric material, a dielectric filler (e.g. titania) is added to an aqueous polymer dispersion. The dielectric filler preferably comprises from 10 to 65% by weight of the dielectric material and PTFE is one the preferred polymers used. Microfibers are then added to the polymer and filler slurry. Once the slurry is mixed in any conventional manner to a point where the polymer, the filler and the fibers are intimately mixed, the materials are agglomerated to provide a dough-like product. The water is removed and a lubricant is mixed with the dried dough. The obtained material is formed by conventional methods such as paste extrusion and/or calendaring into the desired shape (e.g. sheet). Subsequent to the formation of the dielectric material, conductive plates are adhered to the dielectric material. The formed sheets and the conductive plates are laminated to cause densification of the sheets and adhesion of the sheets to each other and to the conductive plates. Although D2 does not expressis verbis mention the thickness of the dielectric material, it indicates in its Example 1 that the spacing between the rollers of the calenders is between 35 and 45 mil and it discloses in its Example 3 laminates including two 34  $\mu\text{m}$  thick copper foils and having a total thickness between 0.68 and 0.75 mm (cf. D2, column 2, line 58 to column 3, line 46; column 4, lines 5 to 20; column 5, lines 5 to 62; Examples 1, 3). D2 neither refers to expanded PTFE nor to thin (i.e. having a thickness between 2.5 and 127  $\mu\text{m}$ ) highly filled PTFE films and is totally silent on

the MTS of the films and on the presence or absence of pinholes therein.

5.1.3 D3 relates to a process for the production of porous products of tetrafluoroethylene polymers, which process comprises expanding a shaped article consisting essentially of highly crystalline PTFE made by paste forming extrusion technique, after removal of lubricant by stretching the unsintered shaped article at a rate exceeding about 10% per second and maintaining the shaped article at a temperature between about 35°C and the crystalline melting point of the tetrafluoroethylene polymer during the stretching. The porous articles obtained exhibit a specific structure consisting of nodes interconnected by fibrils and due to this specific structure possess high strength. In its Example 4, D3 discloses the manufacture of an expanded filled film by expanding in the longitudinal direction a calendered film having a thickness of 203  $\mu\text{m}$  (0.008 inch) and comprising asbestos powder in proportion of four parts by weight resin to one part asbestos. D3 also teaches that it is possible to produce high strength and high density products by compressing the expanded material (cf. D3, Claim 1; column 1, lines 21 to 41; column 2, line 50 to column 3, line 8; Example 4, Example 16). D3 does not disclose thin films of highly filled PTFE being free of pinholes.

5.1.4 D4, which is closely related to D2, deals with the manufacture of the dielectric material used in the production of the microwave circuit boards of D2 and does not in fact add further information in respect to that already contained in D2.

5.2 There is no need further to deal with the products RO 2800, RO 2810 and RT Duroid 6010 since it has not been contested that these products have respectively been obtained according to D1 (cf. D1, page 13, lines 2 to 3; cf. also E1) and to D2 (cf. E.13).

5.3 Thus, none of the cited documents discloses a densified film of filled PTFE having a structure comprising nodes interconnected by fibrils and exhibiting the combination of features (a), (b) (c) and (d) as set out in Claim 1.

It also evident that none of the cited documents discloses a process comprising all the steps (a) to (f) as set out in process Claim 15 in order to obtain a film having a thickness between 2.5 and 127  $\mu\text{m}$ , an unsintered matrix tensile strength of at least 246  $\text{kg}/\text{cm}^2$  and being substantially free of visual pinholes.

Thus, Claim 1, dependent Claims 2 to 14, and Claim 15 meet the requirements of Article 54 EPC.

6. *Closest prior art, technical problem and its solution*

6.1 The patent in suit relates to thin films of highly filled PTFE.

6.2 Such products are known from D1, in particular from Table 4 thereof, in which a pinhole free film is exemplified (cf. paragraph 5.1.1 above). This Example qualifies, therefore, in the Board's view, as the closest prior art.

- 6.3 Starting from this Example of Table 4 of D1, the technical problem underlying the patent in suit may be regarded as the provision of further thin filled PTFE films substantially free of visual pinholes having in addition a high strength.
- 6.4 The solution proposed in the patent in suit is to expand the highly filled PTFE film to give it a specific structure comprising nodes interconnected by fibrils, this resulting in a high MTS.
- 6.5 The effectiveness of the proposed solution, as illustrated, for instance, in Examples 1, 2, 4 and 5 of the patent in suit (MTS between 302 and 1142 kg/cm<sup>2</sup>) has not been put in question by the Respondent, and the Board sees no reason to take a different view.
7. *Inventive step*
- 7.1 It remains to be decided whether this solution was obvious to a person skilled in the art having regard to the cited prior art.
- 7.2 An essential feature of the claimed film is the requirement that the filled PTFE film has been expanded prior to being densified and that it therefore exhibits a structure comprising nodes interconnected by fibrils.
- 7.3 There is no mention in D1 of expanded PTFE, let alone of a structure comprising nodes interconnected by fibrils. On the contrary, D1 solves the problem of the absence of pinholes in a totally different way from the patent in suit by the use of a filler having a specific particle size distribution (no particles equal or greater than 30 µm). This would therefore lead away

from the solution proposed in the patent in suit.

7.4 D2 and D4 neither mention the use of expanded PTFE nor refer to thin highly filled PTFE films and cannot provide any assistance to the solution of the technical problem.

7.5 Although D3 relates to the manufacture of expanded articles of PTFE, which may contain fillers and may be densified, there is no hint in D3 to use an expansion step in order to provide thin and highly filled PTFE free of pinholes. Furthermore, it could not have been foreseen that this step would not deteriorate the surface of a highly filled PTFE film, since the expansion would inevitably modify the filler distribution in the film. Consequently, D3 would not provide any assistance to the solution of the technical problem.

- 7.6 It follows that the solution to the stated problem does arise in an obvious way from the cited prior art. Consequently, the subject-matter of Claims 1 and 15, and by the same token that of dependent Claims 2 to 14 involves an inventive step.

## **Order**

### **For these reasons it is decided that:**

1. The decision under appeal is set aside.
  
2. The case is remitted to the Opposition Division with the order to maintain the patent on the basis of Claims 1 to 15 filed during the oral proceedings after any necessary consequential amendment of the description.

The Registrar:

The Chairman:

E. Görgmaier

R. Young