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Datasheet for the decision of 14 April 2015

Case Number: T 1426/13 - 3.3.09

Application Number: 04766276.2

Publication Number: 1651438

IPC: B32B27/36, B32B27/32, B32B27/30

Language of the proceedings: EN

Title of invention:
Multilayer oriented high-modulus film

Patent Proprietor:
Cryovac, Inc.

Opponent:
Isarpatent

Headword:

Relevant legal provisions:
EPC Art. 54, 56
RPBA Art. 12(2), 13

Keyword:
Admissibility of opposition - (yes)
Admissibility of opponent's appeal - (yes)
Late submitted documents - admitted (yes)
Fresh ground for opposition - admitted (no)
Fresh ground for opposition - patentee did not consent
Main request (granted claims) - novel and inventive

Decisions cited:
G 0009/91, G 0003/99, T 0482/89, T 0020/94, T 0482/02

Catchword:

Europäisches Patentamt
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Case Number: T 1426/13 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 14 April 2015

Appellant: (Patent Proprietor)	Cryovac, Inc. 100 Rogers Bridge Road Duncan, SC 29334 (US)
Representative:	Fraire, Cristina PGA S.r.l. Via Mascheroni, 31 20145 Milano (IT)
Appellant: (Opponent)	Isarpatent Patent- und Rechtsanwälte Friedrichstrasse 31 80801 München (DE)
Representative:	Isarpatent Patent- und Rechtsanwälte Postfach 44 01 51 80750 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 24 April 2013 maintening European patent No. 1651438 in amended form**

Composition of the Board:

Chairman	W. Sieber
Members:	N. Perakis
	F. Blumer

Summary of Facts and Submissions

I. Mention of the grant of European patent No. 1 651 438 in the name of Cryovac Inc. was published on 23 March 2011 (Bulletin 2011/12). The patent was granted with 16 claims. Independent claims 1 and 15 read as follows:

"1. A multi-layer, bi-axially oriented, thermoplastic film comprising a first outer layer comprising a polyester or a copolyester, a second outer layer comprising an ethylene- or propylene- homopolymer or copolymer, a core layer comprising an ethylene-vinyl alcohol copolymer, and no core polyamide or polyester layers, said film having a modulus (evaluated according to ASTM D882) higher than 6,000 kg/cm^2 in at least one direction."

"15. A process for the manufacture of a bi-axially oriented, thermoplastic film comprising a first outer layer comprising a polyester or a copolyester, a second outer layer comprising an ethylene- or propylene- homo- or co-polymer, a core layer comprising an ethylene-vinyl alcohol copolymer, and no core polyamide or polyester layers, said film having a modulus higher than 6,000 kg/cm^2 in at least one direction, which process comprises coextruding the film resins through a flat die and bi-axial orientating the obtained cast sheet simultaneously in the two perpendicular directions at an orientation ratio in the longitudinal direction higher than 2:1 and at an orientation ratio in the cross-wise direction higher than 2:1 by means of a tenter frame, said process being optionally followed by an annealing or heat-setting step."

II. A notice of opposition was filed by **Isarpatent GbR** requesting revocation of the patent in its entirety on the grounds of lack of novelty and lack of inventive step (Article 100(a) EPC).

III. The documents filed by the opponent during the opposition proceedings included the following:

D1: US 6 406 763 B1;

D3: "The Influence of Sealant Modulus On The Bending Stiffness Of Multilayer Films", DuPont Packaging, Conference Paper, published 14 February 2002, http://www.dupont.com/packaging/techlib/tappi002/tappi002.html;

D4: Chi-Hsien Huang *et al.*, "Predicting the Permeability and Tensile Properties of Multilayer Films from the Properties of the Individual Component Layers", *Polymer Journal*, 2004, 36(5), pp. 386-393;

D7: Product data sheet of Borealis PP RB307MO, IDES Prospector;

D8: Product data sheet of Exact 0201, DEXPLASTOMERS;

D9: Product data sheet of Eastar 6763, IDES Prospector;

D10: JP 2001-347622 A,
D10': Machine translation of D10;
D10'': Interpreter's translation of selected passages of D10;
D10''': Interpreter's full translation of D10.

In this decision any reference to D10 should be taken to mean its full translation D10'''.

IV. By an interlocutory decision announced orally on 5 April 2013 and issued in writing on 24 April 2013 the opposition division maintained the patent on the basis of claims 1 and 2 of the first auxiliary request submitted during the oral proceedings, the claims of which corresponded to independent process claim 15 and dependent claim 16 as granted.

Concerning the main request (patent as granted), the opposition division held that the subject-matter of claim 1 lacked novelty in view of example 11 of D10.

V. On 24 June 2013 the patent proprietor filed an appeal against the decision of the opposition division; it paid the appeal fee on the same day. The statement setting out the grounds of appeal was filed on 4 September 2013. The proprietor requested that the decision of the opposition division be set aside and that the patent be maintained as granted (main request) or alternatively, on the basis of one of the five auxiliary requests enclosed. The proprietor also requested that the following documents be admitted into the proceedings:

D15: Declaration of Mr. Forloni dated 27 July 2013 concerning reproduction of example 11 of D10;

D16: Declaration of Mr. Forloni dated 27 July 2013 concerning the searches conducted for a supplier of "hydrogenated copolymers of ethylene/propylene/carbon monoxide"; and

D17: Three page extract from "Film Extrusion Manual", Tappi Press, 1992.

VI. On 3 July 2013 the opponent, identified in the heading on page 1 as **Isarpatent Patent- und Rechtsanwälte Friedrichstrasse 31, 80801 München / DE**, filed an appeal against the decision of the opposition division and paid the appeal fee on the same day. The statement setting out the grounds of appeal was filed on 29 August 2013. The opponent requested that the decision of the opposition division be set aside and that the patent be revoked in its entirety.

VII. Since both parties filed an appeal, for simplicity the board will refer to them below as the patent proprietor and the opponent.

VIII. By letter of 20 January 2014 the opponent, identified in the heading on page 1 as **Isarpatent**, requested that the auxiliary requests not be admitted into the proceedings. It raised a fresh ground for opposition under Article 100(b) EPC against the main request (patent as granted), and argued that the subject-matter of claim 1 as granted lacked novelty in view of D1 and D10 and was not based on an inventive step. With respect to the proprietor's reproduction of example 11 of D10, i.e. D15, and the assertion that this example was not prior art because it could not be reworked, it filed documents D18 to D22. D23 to D29 were filed to demonstrate that the film of example 1 of D1 inherently had a modulus higher than 6,000 kg/cm^2 in at least one direction. It also filed the following documents:

D18: Technical data sheet of Ingeo^{TM} Biopolymer 4043D, Nature Works LLC;

D19: EP 0 334 454 B1;

D20: JP 06-255057 A, including a machine translation thereof;

D21: JP 06-226925 A, including a machine translation thereof;

D22: L.E. Govaert *et al.*, "Influence of strain rate, temperature and humidity on the tensile yield behaviour of aliphatic polyketone", *Polymer*, 2000, 41, pp. 1959-1962;

D23: Product data sheet of Exact™3128 from ExxonMobil Chemical, http://exxonmobilchemical.ides.com/en-US/ds133765/Exact%E2%84%A2%203128.aspx?l=0, 13/1/2014;

D24: Affinity™Polyolefin Plastomers and Polyolefin Elastomers, Product Selection Guide, The Dow Chemical Company, July 2013;

D25: Product data sheet of Plexar PX3227 from LyondellBasell Industries Holdings BV, 2013;

D26: Product data sheet of EVAL™ SP292B from Kuraray, 13 April 2012;

D27: Product data sheet of Polimeri Europa Greenflex® FD 20 Ethylene Vinyl Acetate Copolymer, http://www.matweb.com/search/datasheet.aspx?matguid=956fcb83d39948c59a40fb1ff74fcca6&ckck=1, 13 January 2014;

D28: Product data sheet of DuPont™ Bynel® 3861, E.I. du Pont de Nemours and Company, Inc, 1 August 2010; and

D29: Product data sheet of Blow (biaxial oriented) Molding Grade "IFG8L" of Bell Polyester Products, Inc, htpp://www.bellpet.co.jp/english/jigyou/products-ifg8l.html, 16 January 2014.

IX. By letter of 14 July 2014 the patent proprietor filed new auxiliary requests A, B, C, D, E, A', B', C', D', and E'. It requested that D18 to D29 not be admitted into the proceedings because they were late-filed, and that the late-filed experimental trials of the opponent, allegedly reproducing example 1 of D1, be rejected. In reply to the doubts raised by the opponent concerning the effect obtained by the patent in suit, it submitted *inter alia*:

D30: Technical report "Comparison manufacturing trials" signed by Mr. Forloni and dated 2 April 2014; and

D33: Declaration of Mr. Forloni concerning the thickness of the tapes of D15, dated 14 July 2014.

Regarding the fresh ground for opposition under Article 100(b) EPC, the patent proprietor did not consent to its introduction into the appeal proceedings.

X. By a communication dated 28 January 2015 the board expressed its provisional view on relevant issues in preparation for the oral proceedings scheduled to take place on 14 April 2015.

XI. By letter of 13 February 2015 the opponent, identified as **Isarpatent**, **Munich**, **DE** in the heading on page 1, reiterated its requests and arguments regarding the lack of novelty and lack of inventive step of the subject-matter of claim 1 of the main request in view of D1 and D10, and cited a new document D34 referred to in D1:

D34: US 5 759 648 A.

XII. By letter of 6 March 2015 the patent proprietor requested for the first time in these proceedings that the notice of opposition be rejected as inadmissible because at the end of the opposition period the identity of the opponent had not been certain. In the alternative, it requested that the appeal be rejected as inadmissible because the alleged appellant, **Isarpatent Patent- und Rechtsanwalte**, was not a party adversely affected by the impugned decision, which had been issued to **Isarpatent GbR**. In this context it submitted:

D35: Extract from the Munich partnership register.

The patent proprietor further requested that the opponent's representative be required to produce an authorisation.

XIII. By letter filed on 13 March 2015, the patent proprietor maintained its previous requests, except for auxiliary requests C' and D', and submitted further arguments regarding novelty and inventive step.

XIV. On 25 March 2015 the board issued a communication requesting the opponent/appellant to provide the

necessary clarifications regarding its identity, in particular with regard to the following questions:

1. who the opponent was when the opposition was filed;
2. who the appellant was and who the opponent was when the appeal was filed; and
3. who the opponent was and who the appellant was now.

XV. By letter dated 2 April 2015 the opponent/appellant, identified in the heading on page 1 as **Isarpatent, Munich, DE**, provided clarifications and filed Annexes 1 to 5:

Annex 1: An extract from the partnership contract with the legal form of a GbR dated 18 December 2006

Annex 2: Decision of the Oberlandesgericht München of 28 September 2012 regarding the change of name of Isarpatent;

Annex 3: Letter to the German Patent and Trademark Office of 9 December 2011;

Annex 4: An extract from the contract of Dr. Hecht signed on 23 March 2012;

Annex 5: Decision of the partners of Isarpatent GbR of 16 December 2013, concerning the transformation of Isarpatent from a GbR into a "Partnerschafts-gesellschaft mit beschränkter Berufshaftung" according to the German Partnerschaftgesetz.

On the basis of the above it was argued that the opponent/appellant had been the same legal entity from the time of filing the opposition until now; that the

company's name was "Isarpatent" and that the legal entity was identical to "Isarpatent GbR" and "Isarpatent Patent- und Rechtsanwälte".

XVI. On 14 April 2015 oral proceedings were held before the board. The board decided to admit all late-filed documents and all pieces of technical evidence into the proceedings. The patent proprietor withdrew its request with regard to the authorisation of the opponent's representative. The debates concerned the issues of the admissibility of the opposition and the appeal as well as the novelty and inventive step of the claims of the main request, i. e. the claims as granted. Hence, any reference in this decision to claims relates to the claims of this request.

XVII. The relevant arguments put forward by the patent proprietor in its written submissions and during the oral proceedings may be summarised as follows:

Admissibility of opposition and appeal

- The opposition was not admissible because Isarpatent GbR did not exist when the opposition was filed. But even if it had existed, it was not clear which persons were members of the GbR.

- The appeal was not admissible because it was filed on behalf of Isarpatent Patent- and Rechtsanwälte and not on behalf of Isarpatent GbR.

- It was not clear who the opponent was and who the appellant was after the registration of "Isarpatent - Patentantwälte Behnisch Barth Charles Hassa Peckmann und Partner mbB", a legal

entity which was not identical to "Isarpatent- und Rechtsanwälte" or "Isarpatent GbR".

Fresh ground for opposition

- The objection under Article 83 EPC had been raised for the first time at the appeal stage. According to established case law (see G 9/91, OJ EPO 1993, 408, point 18 of the decision) a new ground of opposition could be admitted into opposition appeal proceedings only exceptionally and with the proprietor's consent - which was not the case here. Thus, this objection should be dismissed as inadmissible.

Late-filed documents and technical evidence

- Documents D15 to D17 should be admitted into the appeal proceedings. They had been filed in order to substantiate the doubts regarding the reproducibility of example 11 of D10, as expressed by Mr. Forloni in his declaration (see D10a) submitted during the oral proceedings before the opposition division. These documents should be admitted into the appeal proceedings because the opposition division had not granted the patent proprietor the requested time to conduct appropriate testing based on the teaching of D10.

- Documents D18-D29 submitted by the opponent with its letter of 20 January 2014 should not be admitted into the appeal proceedings, because they were late-filed. Furthermore, the late-filed, inaccurate and not credible experimental trials of the opponent, allegedly reproducing example 1 of

D1, should also not be admitted into the proceedings.

Novelty in view of D1

- Example 1 of D1 did not disclose the multilayer film of claim 1, in particular because it did not disclose a modulus of at least 6,000 kg/cm^2 in at least one direction. The burden of proof in that context was on the opponent.

- The opponent's additional data filed with letter of 20 January 2014 in an attempt to show that the film of example 1 of D1 inherently had a modulus higher than 6,000 kg/cm^2 in at least one direction were late-filed and not credible. Moreover, they did not correspond to an accurate reproduction of example 1 of D1 because of the arbitrary selection of the resins, the layer sequence and the layer thickness from the teaching of D1.

- Regarding the theoretical calculation of the modulus of the film of example 1 of D1, in view of the additive rule of D4 and the resin modulus values of D3, such a calculation was carried out making various selections and approximations with the result that the calculated value depended on the approximation and selections made and could accordingly be higher or lower than the threshold value of claim 1.

- According to the patent proprietor's own calculation of the modulus of the film of example 1, using the additive rule of D4 and choosing alternative plausible modulus values for some of the components of the film of example 1 of

D1, the modulus value was 4,807 kg/cm^2, which was lower than the 6,000 kg/cm^2 required by claim 1. On this basis the patent proprietor concluded that the theoretical method of calculating the modulus of a mutilayer film was not conclusive. Therefore, the "modulus feature" of the film of claim 1 was not directly and unambiguously derivable from D1.

Novelty in view of D10

- Example 11 of D10 was not reproducible and thus its technical content could not be regarded as proper state of the art. A declaration (D10a) from the patent proprietor's expert Mr. Forloni, who was one of the inventors of the patent in suit, had been submitted during the oral proceedings before the opposition division. According to him, a person skilled in the art reading D10 would not have been convinced that the film of example 11 of D10 could have been manufactured, because the film could not have been oriented at such high stretching ratios and such low temperatures without breaking.

- Furthermore, the patent proprietor had conducted several experimental trials following the teaching of D10 (see D15) and, although it had used today's technology and skills, it had not been able to obtain a film according to example 11 of D10.

- According to the patent proprietor, that was because the resins used in the layers of the film of example 11 were not sufficiently disclosed. This concerned in particular the component "hydrogenated copolymer resin of ethylene (partially propylene)-carbon monoxide copolymer

resin" (this terminology was used in paragraph [0066] of the translation of D10), which neither was defined in terms of the amounts of the monomers nor in terms of the degree of polymerisation, nor even in terms of the degree of hydrogenation. Furthermore, D10 did not provide any manufacturing process or any characterising parameter, or even any trademark or supplier of the resin. Under these circumstances, example 11 of D10 was not enabling.

- Additionally, D10 did not disclose the process conditions to be used for making the film, namely the compounding, extrusion and orientation conditions. From D15 it was evident that many process parameters had to be set for manufacturing the film. Compounding was not even mentioned in D10; yet the components of the first outer layer had to be incorporated into a composition before extrusion of the tape which contained polyesters and a particularly high amount of incompatible oils necessitating particular compounding conditions and equipment. Using conventional machinery and a conventional manufacturing procedure Mr. Forloni had obtained non-uniform sticky pellets which, upon extrusion, resulted in tape breakage and/or delamination. Also in view of these deficiencies, example 11 of D10 was not enabling.

- When trying to reproduce example 11 of D10, Mr. Forloni did not use the resins cited in the example, because they were not available. He used their most plausible alternatives. Regarding the hydrogenated copolymer of ethylene (partially propylene)-carbon monoxide copolymer, Mr. Forloni

did not use a polyketone, although he looked for suppliers of that product - with no success. He therefore replaced it with the most similar resin available he was aware of. Although polyketones were prepared and used at the publication date of D10 (see D19-D22), neither were they commercially available at present nor did D10 give any guidance to the skilled person as to how to manufacture them, with the result that he would have had to perform an unreasonable number of experiments to find out the right combination.

- Contrary to the assertions of the opponent, the failure of the experiments of Mr. Forloni, as shown in D15, was not due to the low thickness of the tape. In view of his declaration (D33) the thickness of 9 µm concerned the oriented film, while the thickness of the tape was much larger, namely 220 µm.

- The results of Mr. Forloni's trials demonstrated that there was a substantial insufficiency of disclosure in D10 due to the lack of essential information relating to the components of the film surface layers, and the parameters and the equipment used for manufacturing the film.

- Furthermore, D10 did not disclose films with an outer heat-sealable layer, which was a further difference of the packaging films of claim 1. Even if heat-sealability was not explicitly mentioned in claim 1, it was clearly derivable from the description.

- Finally, D10 did not disclose a film with a modulus higher than 6,000 kg/cm^2 in at least one

direction, because the calculation of the modulus value reported in paragraph [0082] was not clearly and unambiguously carried out following the ASTM D882 method of the patent in suit.

Inventive step

- The closest prior art was that disclosed in the patent in suit, which concerned a film structure with a core layer of polyamide or polyester providing the necessary stiffness to the film. D1 should not be considered to represent the closest prior art, because the films were not disclosed to achieve the necessary stiffness in terms of modulus.

- The technical problem was that disclosed in paragraphs [0008] and [0009] of the patent in suit and concerned the provision of a simpler multilayer, bi-axially oriented, thermoplastic film with high modulus in at least one direction, which compared to the prior-art films did not need any polyamide or polyester core layer. The solution of the technical problem was provided by the claimed film which had an "unbalanced" structure in terms of the modulus, i.e. it was the polyester outer layer, rather than the core layer, which provided the necessary stiffness to the film by adapting its thickness. The technical evidence of the patent and D30 showed that the technical problem had successfully been solved and that the film was feasible.

- The prior art did not give the skilled person any indication towards the claimed solution, with the

consequence that the subject-matter of claim 1 was not obvious and involved an inventive step.

XVIII. The relevant arguments put forward by the opponent in its written submissions and during the oral proceedings may be summarised as follows:

Admissibility of opposition and appeal

- Both the opposition and the appeal were admissible. The non-incorporated private company referred to as "Isarpatent GbR" when the opposition was filed was both the opponent and the opponent/appellant.

- The opposition was filed on 23 December 2011 by "Isarpatent GbR", which had the legal form of a company constituted under German civil law. The supplement "GbR", indicating the legal personality of the company, was not obligatory since it was not distinctive and did not have a name function.

- The company had operated under the designation "Reinhard Skuhra Weise & Partner GbR" since 1985. Despite the fact that several partners had joined the company while others had retired, the legal entity had remained continuously the same. Annex 1 was an extract from the last partnership contract, concluded before the opposition was filed. It showed that seven persons agreed to do common business under the designation "Reinhard Skuhra Weise & Partner GbR Patent- und Rechtsanwälte". The business was done at Friedrichstrasse 31 in Munich. According to their contract, the professional business of the members of the company had to be done exclusively within the

scope of the company. The contract had remained in force and had not been abandoned at any time. The indication "Patent- und Rechtsanwälte" was used only to indicate the business purpose and the type of services provided by the company; it was not part of the company's name according to German law.

- After the last partner lending his name to the company had retired, namely Mr. Skuhra, the name of the company had been changed to "Patent- und Rechtsanwälte Isarpatent GbR". This was shown in Annex 2, a decision of the Oberlandesgericht München dated 28 September 2012, referring to "Patent- und Rechtsanwälte isarpatent GbR (vormals Reinhard Skuhra Weise & Partner GbR)" and indicating the change of name and the new name. Therefore the identity of the company had remained the same although the name had been changed.

- During a transitional period after the name change, the old designation "Reinhard Skuhra Weise & Partner GbR" had been used in small letters in addition to the new company's name in order to document the continuity of the company. This was illustrated by Annex 3, a letter to the German Patent and Trademark Office dated 9 December 2011 summarising the situation and clarifying also the use of the old name in the letterhead for a transitional period.

- This was further confirmed by Annex 4, an extract from the contract of Dr. Hecht who had joined the company in March 2012, in which reference was made to the company's name "Isarpatent" vormals RSW (Reinhard Skuhra Weise & Partner GbR).

- When the appeal was filed the company's name was still "Isarpatent" and the legal entity was identical to "Isarpatent GbR" since the supplement "GbR" was merely indicative of the company's legal form and did not need to be present under German law. The company's legal entity was also identical to "Isarpatent Patent- und Rechtsanwälte" since the indication "Patent- und Rechtsanwälte" only indicated the business purpose and the services provided by the company and was not part of the company name according to German law. Thus no change in the legal form had taken place and all contracts concluded before were still valid. Consequently, the opponent/appellant at the time of filing the appeal was the same legal entity as the one who had filed the opposition.

- The partners of "Isarpatent" decided on 16 December 2013 to change the legal form of the company from GbR to a "Partnerschaftsgesellschaft mit beschränkter Berufshaftung" according to the German Partnerschaftsgesetz (PartG). This decision was submitted as Annex 5. The conversion was what was known in German as a so-called "identitätswahrender Formwechsel", i.e. a change in legal form but not identity. The name of the company in that decision was "Isarpatent - Patentanwälte Behnisch Barth Charles Hassa Peckmann und Partner mbB" since, according to §2(1) PartG, the indication of at least one partner was required in the company's name after the conversion. Consequently, the present opponent/appellant was the same legal entity as the one who had filed the opposition and the appeal.

- Therefore the requirements of the EPC and the corresponding case law of the boards of appeal of the EPO with respect to the recognisability of the identity of the opponent and the appellant were fully met.

Fresh ground for opposition

- The claimed invention lacked sufficiency of disclosure. Claims 1 and 15 required at least a three-layer structure with two outer layers and a core layer. In such a configuration, the core layer was based on an ethylene-vinyl alcohol copolymer and one of the outer layers was based on an ethylene homo- or copolymer. It was, however, known that the adhesion between ethylene polymers and the ethylene-vinyl alcohol copolymer was poor (see D17, table 12 and Mr. Forloni's experiments in D15, in particular example 2). Thus, there was a definite need for an intermediate adhesive layer between the two layers in order to make the invention workable. As such a layer was not included in the claims, the requirements of Article 83 EPC were not met.

Late-filed documents and technical evidence

- Documents D18-D29 should be admitted into the proceedings. D18 to D22 had been filed in response to the alleged non-enablement of example 11 of D10. D23 to D29 had filed in order to support the opponent's reworking of example 1 of D1 and to show that the materials used in the reworked example were equivalent to the materials used in example 1 of D1.

- The data and calculations submitted with the letter of 20 January 2014 should be admitted into the appeal proceedings. They had only been brought forward as further evidence confirming the arguments of lack of novelty of claim 1 submitted from the beginning of the opposition proceedings and considered insufficient by the opposition division. No new information was added to the disclosure of D1 by filing these data.

- D34 which disclosed simultaneous bi-axial stretching in transverse and machine directions should be admitted into the proceedings. D34 was cited in D1 and was thus an integral part of its disclosure.

Novelty in view of D1

- Example 1 of D1 disclosed a multilayer film having the structure of the film of claim 1. Since the film according to D1 and the claimed film were manufactured by the same method, they should have the same modulus. Consequently the modulus value in example 1 of D1 was inherently higher than 6,000 kg/cm^2 in at least one direction.

- Furthermore, the skilled person was able to calculate the modulus of the multilayer film of example 1 of D1 based on D3 and D4. D4 disclosed a model additive rule for predicting stiffness of multilayer films based on a model three-layer film, which rule combined the thickness and the modulus of the individual layers. D3 disclosed modulus values for the resin classes used in the layers of D1. The opponent had already provided a modulus value with the notice of opposition,

namely 8,370 kg/cm^2, and submitted during the oral proceedings before the board a further value corresponding to the worst-case scenario, based on the lowest disclosed modulus values of the resins in the layers, namely 6,716 kg/cm^2. On the basis of these values it concluded that example 1 of D1 still fulfilled the modulus requirement of claim 1.

- Moreover, the opponent submitted technical evidence concerning the reworking of example 1 of D1 and measured the modulus of the film using ASTM D882. In this reworking, materials different from those disclosed in D1 were used, as those of D1 were no longer available. The opponent argued that the alternative materials were as close as possible to those of example 1 of D1 (see data sheets D23-D29). The measured modulus was 615 MPa, 678 MPa and 720 MPa in the longitudinal direction, i.e. higher than the lower limit of 6,000 kg/cm^2 of claim 1. On this basis the opponent concluded that the film of example 1 of D1 fulfilled the modulus requirement of claim 1.

Novelty in view of D10

- Example 11 of D10 disclosed not only a film structure falling within that of the film of claim 1 but also its modulus value, which was 9,000 kg/cm^2 measured using ASTM-D882. Thus, the subject-matter of claim 1 lacked novelty.

- Contrary to the patent proprietor's assertion, the film of claim 1 did not differ from the film of D10 in terms of heat-sealability, since this feature was absent from the claimed subject-

matter. Nor did the claimed film differ from that of D10 in terms of the definition of the polyester resin, since claim 1 did not define this resin as not being hydrogenated or not including carbon monoxide monomers.

- Nor could it be argued that the method used in D10 for measuring the modulus was not according to ASTM-D882. D10 clearly disclosed that the modulus was measured according to that method, despite the fact that additional information regarding that measurement was given in paragraph [0059].

- It was incorrect to dispute the sufficiency of the disclosure of example 11 of D10 on the basis of declarations D10a (submitted during the oral proceedings before the opposition division) and D33 as well as on the basis of additional technical evidence (D15 and D30). Actually, the film structure used in the technical evidence differed in several aspects from that disclosed in example 11 of D10 and in particular regarding the polyester resin used in the first outer layer. Example 11 disclosed that it comprised 15 wt.% of hydrogenation copolymers of a copolymerisation resin of ethylene (partially propylene) carbon monoxide, which was a polyketone. Even if the specific polyketone of D10 was not commercially available when the patent proprietor reworked example 11, this polymer was well-known (see D19-D22). As the proprietor did not use a polyketone in its additional experimental evidence but replaced it by a totally different polyester, it was not surprising that it failed to obtain the film of example 11 of D10. Therefore, the

experimental evidence of the patent proprietor was not relevant.

Inventive step

- D1 should be considered to represent the closest prior art. D1 disclosed films with no polyamide or polyester core layers and differed from the film of example 1 of D1 only in that it had a higher modulus in at least one direction.

- The problem formulated in paragraph [0009] of the patent in suit relating to the provision of a film with no core layer of polyamide or polyester had already been solved by D1 whose film did not contain such a core layer. Thus the technical problem consisted in the provision of a film with a higher modulus.

- The skilled person starting from the film of D1 and looking for a film with a higher modulus in at least one direction would find in D3 the necessary guidance as to how such a multilayer film might be designed and manufactured so that a modulus higher than 6,000 kg/cm^2 could be attained, when a need arose for a stiff multilayer film. Indeed, D3 disclosed that polyester films provided a high modulus and the skilled person would find therein the motivation to use a thicker polyester in order to increase stiffness. Incidentally, the value of 6,000 kg/cm^2 was not exceptional; D10 disclosed much higher values, namely exceeding 22,000 kg/cm^2 (see paragraph [0004]). Consequently, the claimed subject-matter lacked an inventive step on the basis of D1 in the light of D3.

- Moreover, the subject-matter of claim 1 lacked an inventive step because the effect of increased modulus was not obtained across the entire scope of the claim. This effect concerned exclusively films obtained by a method using simultaneous bi-axial orientation by means of a tenter frame, which was not at all part of claim 1.

XIX. The patent proprietor requested that:
- the opposition be rejected as inadmissible;
- the opponent's appeal be rejected as inadmissible;
- the decision of the opposition division be set aside and that the patent be maintained as granted, or, alternatively, according to one of the auxiliary requests, in the order A, B, C, A', B', D, E, E', filed with letter dated 14 July 2014.

The opponent requested that the decision of the opposition division be set aside and that the patent be revoked in its entirety.

Reasons for the Decision

1. Representation

The patent proprietor had raised an objection concerning the opponent's representation during the written appeal proceedings which was withdrawn at the oral proceedings before the board. The board did not see any reason to pursue the issue of its own motion. The opponent/appellant has, throughout the whole opposition and appeal proceedings, always been

represented by Mr. Sandmann who may, as a professional representative, represent any party in any proceedings before the EPO. The board has not seen any reason to request an authorisation in view of the decision of the President of the EPO dated 12 July 2007 on the filing of authorisations (OJ EPO Special edition No. 3/2007, 128). It is irrelevant whether Mr. Sandmann could also act for the legal entity "Isarpatent GbR" by virtue of his role in this legal entity. It is equally irrelevant whether Mr. Sandmann was or is a member of any association of representatives (Rule 152(11) EPC) which may be related to the opponent/appellant.

2. Admissibility of the opposition

2.1 Identity of the opponent when the notice of opposition was filed

2.1.1 The notice of opposition was filed on 23 December 2011 on behalf of "Isarpatent GbR" (see above point II), said denomination appearing as "isarpatent GbR" on Form 2300E and as "Isarpatent GbR" on the accompanying letter explaining the grounds on which the opposition was based. Any "Gesellschaft bürgerlichen Rechts" ("GbR") may, under German law, be a party to legal proceedings, both actively (e.g. as a plaintiff or claimant) and passively (e.g. as defendant or respondent), even though a GbR is not registered in any public register (see patent proprietor's letter of 6 March 2015, pages 6/7). It has not been contested that a "GbR" existing under German law may act as an opponent in proceedings before the EPO. An opposition under Article 99 EPC may be filed by "any body equivalent to a legal person by virtue of the law governing it" (G 3/99, OJ EPO 2002, 347, point 9).

2.1.2 The board notes that the lack of public registration may contribute to some uncertainty or even confusion about the name (including its spelling) and/or the identity of a GbR at specific points in time. However, the EPO has to accept the fact that such unregistered legal entities lawfully exist and may be a party in any proceedings before the EPO. Any evidence provided with respect to the details of the GbR relevant to the present case had to be evaluated in accordance with the principle of free and unfettered consideration of evidence (see e.g. T 482/89, OJ 1992, 646).

2.1.3 The patent proprietor argued that it was not clear whether Isarpatent GbR or Reinhard Skuhra Weise & Partner GbR as a legal entity or even a group of natural persons was acting as opponent. It also argued that it was not clear who was a member of Isarpatent GbR when the opposition was filed.

2.1.4 When the opposition was filed, "Isarpatent GbR" (or "isarpatent GbR") - and no other person or legal entity - appeared as opponent on all documents filed (above point 2.1.1). From these references, it must have been concluded at the time of filing the opposition that a legal entity using the name "Isarpatent GbR" was the opponent.

2.1.5 The reference to "Reinhard Skuhra Weise & Partner GbR" on the letterhead was explained by the opponent as a reference to the former name of the same GbR. The board is convinced that this is correct. As there is no official registration of the GbR that could be used to verify the details of such legal entity, the board has to rely on the parties' assertions and the documents issued by the opponent. The documents filed with the opponent's letter dated 2 April 2015 (in particular,

Annexes 2 to 4) clearly show that the members of Reinhard Skuhra Weise & Partner GbR (RSW) intended to continue and continued the GbR as "Isarpatent GbR" without changing the identity of the GbR (see, in particular, the reference "vormals RSW" in Annex 4, preamble). The name change occurred before the opposition was filed (Annex 3 dated 9 December 2011). However, even if "Reinhard Skuhra Weise & Partner GbR" was another entity than Isarpatent GbR, it would still be clear from the documents filed on 23 December 2011 that only "Isarpatent GbR" could be the opponent because it was easy to distinguish between the references to the opponent and the letterhead of the opponent's representative (which is irrelevant for the identification of the party represented).

2.1.6 Under these circumstances, it is clear to the board that no other entity than Isarpatent GbR could have been the opponent. The opposition was therefore admissible when it was filed.

2.2 Identity of the opponent during the proceedings before the opposition division

2.2.1 Subsequent facts, in particular the admission of new members to the legal entity Isarpatent GbR, did not change the identity of said entity either. It is very common for a GbR to have changes in its membership, subject to the terms and conditions set forth by the contracts establishing the GbR. From the extracts from the "Sozietätsvertrag" (Annexes 1 and 4 to the letter of 2 April 2015) the board understands that the members of Isarpatent GbR wished to continue the identity of the GbR regardless of the retirement or admission of individual members. In particular, the preamble of the "Sozietätsvertrag" of 23 March 2012 (Annex 4) refers to

the admission of a new member to the GbR (not to the establishment of a new GbR) and indicates that the contracts of 2005 and 2006 - establishing the GbR - were still valid. It must be concluded that the identity of the GbR did not change when Mr. Hecht joined the GbR.

2.2.2 Consequently, the admissibility of the opposition was not affected by any changes in the composition of the GbR after the opposition had been filed. The board agrees with the patent proprietor that it was not possible to find out who was a member of the GbR at a specific point in time, either from any letterhead or from any public register. However, the opposition was filed by a legal entity in its own right, and the legal entity (GbR) may be held liable for its obligations, including costs which might be awarded to another party in opposition proceedings before the EPO (see the patent proprietor's letter of 6 March 2015, pages 6/7), which means that it is not necessary to determine the individual members should this party be liable for costs. The present case therefore differs from the facts underlying decision T 482/02, where it remained unclear whether the party was a legal entity or a group of natural persons.

3. Admissibility of the appeals

3.1 Appeal of the patent proprietor

That the patent proprietor's appeal is admissible has not been contested(see above point V).

3.2 Appeal of the opponent

3.2.1 The admissibility of the opponent's appeal has been contested by the patent proprietor, on the ground that the appellant was not identical to the opponent who was adversely affected by the decision under appeal.

3.2.2 The decisive issue is whether the party filing the appeal was identical to the opponent. If the appellant was not identical to the opponent, this party could not be adversely affected by the decision under appeal and the appeal would be inadmissible.

3.2.3 The appeal was filed on behalf of "ISARPATENT Patent- und Rechtsanwälte" whereas the decision under appeal concerned "isarpatent GbR" (patent proprietor's letter of 6 March 2015, page 14). The denomination "ISARPATENT Patent- und Rechtsanwälte" already appeared on Form 2300E when the opposition was filed under the heading "Representative", together with the name of the representative (Mr. Sandmann) and the reference to the association of representatives No. 73 who may have been registered under the name "Isarpatent" or "Isarpatent Patent- und Rechtsanwälte". In any case, as a legal entity may not act as a representative, the reference on Form 2300E can only mean that the opponent was represented by Mr. Sandmann or any other professional representative in association No. 73. It does not contain any information on the relationship between "Isarpatent GbR" and "Isarpatent Patent- und Rechtsanwälte".

3.2.4 The notice of appeal and the statement setting out the grounds of appeal referred to "ISARPATENT Patent- Rechtsanwälte" as "Opponent and Appellant". The documents filed by the opponent with its letter dated

2 April 2015 show that the GbR formerly named "Reinhard, Skuhra Weise & Partner GbR" ("RSW") had called itself "isarpatent Patent- und Rechtsanwälte" at least since March 2012 (see Annex 2, § 1(1) and Annex 4, preamble and § 1.2). It appears that the Oberlandesgericht München has accepted that the two entities are identical (Annex 2).

3.2.5 It may well be that the denomination "Isarpatent" or "Isarpatent Patent- und Rechtsanwälte" has been used for different groups of natural persons (e.g. group of persons listed on the letterheads, group of professional representatives registered as association No. 73) and even as a trademark. However, it is clear from the documents filed with the patent proprietor's letter of 2 April 2015 that "Isarpatent Patent- und Rechtsanwälte" was also the name of the GbR formerly called "Reinhard, Skuhra Weise & Partner GbR" (see above point 3.2.4). There is no support for the argument that the appeal may have been filed on behalf of a group of natural persons, and there is no indication for the co-existence of two legal entities (GbRs) at any time. On the contrary, the fact that the professional business had to be carried out exclusively with in the framework of the GbR (Annex 1, § 2(1)) supports the argument that there was only one GbR at any time.

3.2.6 From the above, the board concludes that the appeal was filed by the same legal entity as the opposition. Consequently, the appeal was admissible when it was filed. In view of the name change from "Isarpatent GbR" to "ISARPATENT Patent- und Rechtsanwälte", the appellant was correctly identified when the appeal was filed and there is no need to correct its name.

3.2.7 In the meantime, the opponent/appellant has been converted into a registered "Partnerschaftsgesellschaft mit beschränkter Berufshaftung" while keeping its identity ("identitätswahrender Formwechsel"). The signatories of the decision establishing "isarpatent - Patentanwälte Behnisch Barth Charles Hassa Peckmann und Partner mbB" are identical to the signatories of the "Sozietätsvertrag" of 23 March 2012 (Annexes 4 and 5 to the patent proprietor's letter of 2 April 2015).

3.2.8 As the identity of the opponent/appellant did not change at any time during the entire opposition and appeal proceedings, the admissibility of the opposition and the appeal was not affected by the name changes and there was no transfer of the opposition or other event requiring additional procedural steps. Since the opponent/appellant has not requested the registration of its latest name change and since it is clear that the present decision is binding for "isarpatent - Patentanwälte Behnisch Barth Charles Hassa Peckmann und Partner mbB" even though it refers to "Isarpatent Patent- und Rechtsanwälte", the board does not see a need to take any further steps as a consequence of this name change.

4. Fresh ground for opposition

During the appeal proceedings, with its letter dated 20 January 2014, the opponent raised an objection of insufficient disclosure under Article 100(b) EPC for the first time. Insufficiency of disclosure is therefore a fresh ground for opposition which, following G 9/91 (see point 18 of the grounds), can only be admitted in appeal proceedings with the consent of the patent proprietor. By letter of 14 July 2014, the patent proprietor categorically refused such

consent with the consequence that this fresh ground was not admitted into the proceedings.

5. Late-filed documents and technical evidence

5.1 The patent proprietor requested that the late-filed documents D18-D29 submitted by the opponent with its letter dated 20 January 2014 and containing the opponent's observations on the patent proprietor's appeal not be admitted into the proceedings.

5.1.1 The board notes that D18-D22 were filed as a reply to the technical evidence previously submitted by the patent proprietor relating to the reworking of example 11 of D10. Since these documents were filed as a reaction to the submissions of the patent proprietor, they were admitted into these proceedings.

5.1.2 Furthermore, the board notes that D23-D29 were filed in order to demonstrate that the film of example 1 of D1 inherently had a modulus higher than 6,000 kg/cm^2 (evaluated according to ASTM D882) in at least one direction. D1 had been filed with the notice of opposition and the opposition division had indicated in the annex to the summons of 28 November 2012 (see point 5.2.1) that there was no appropriate evidence on file to support the view that the film of example 1 of D1 fulfilled the modulus requirement of claim 1. Thereafter the opponent filed D10 and the opposition division decided that the subject-matter of claim 1 lacked novelty over that document. The appealed decision did not assess the novelty over D1, presumingly because this issue was superfluous. The appeal of the patent proprietor and its request to restore claim 1 as granted reopened the novelty issue in respect of all opposed documents, including D1.

Therefore the submission of D23-D29 in the appeal proceedings by the opponent was a legitimate answer to the previously raised objection, and these documents were therefore admitted into the proceedings.

5.2 The patent proprietor also requested that the technical evidence filed by the opponent with the letter dated 20 January 2014, related to the reproduction of example 1 of D1, not be admitted into the proceedings because it was late-filed, inaccurate and not credible.

Regarding the late-filing of this evidence, the reasoning set out above in point 5.1.2 also applies, with the consequence that the additional technical evidence is admitted into these proceedings. The credibility and accuracy of this evidence are issues to consider when assessing the patentability of claim 1.

6. Novelty in view of D1

6.1 Example 1 of D1 (column 15) discloses an eight-layer, heat-shrinkable film, whose manufacture involved bi-axial orientation by stretching in the longitudinal and transverse directions (column 15, lines 31-38). The list of the ingredients in table 1 of column 15 implies that the film is thermoplastic. According to table 1, the structure of the film is:

EPC-1/VLDPE-1/Modified LLDPE-1/EVOH-1/Modified LLDPE-1/ EVA-1/Modified EMA-1/Polyester-1.

Thus the film comprises:

- a first outer layer made of polyester (Polyester-1: a homopolymer of ethylene

terephthalate having a density of 1.4 g/cm^3 and sold by Eastman Chemical under the trademark Eastapak Polyester 12822) (see column 14, lines 39-41);

- a second outer layer made of ethylene propylene copolymer (EPC-1: ethylene/propylene copolymer having a Vicat softening pont of 120°C, a density of 0.900 g/cc, MI of 5.0 g/10 minutes, 3.2 wt% ethylene content and melting point of 134°C, sold by Solvay under the trademark Eltex P KS 409) (see column 13, lines 52-56); and

- a core layer comprising an ethylene-vinyl alcohol copolymer ((EVOH-1:ethylene-vinyl alcohol copolymer sold by Eval of America under the trademark EVAL®LC-E105A) (see column 14, lines 36-38);

- no core polyamide or polyester layers.

Example 1 of D1 does not disclose a modulus higher than 6,000 kg/cm^2 (evaluated according to ASTM D882) in at least one direction; in fact neither example 1 nor the other parts of D1 disclose any modulus value.

6.2 Contrary to the assertions of the opponent, the film of example 1 of D1 is not manufactured in the same way as the films of the patent in suit, which means that the film of example 1 does not inevitably have a modulus value falling within the claimed range. For the manufacture of the film of claim 1 the description discloses that co-extrusion of the film resins takes place through a flat die followed by bi-axial orientation of the obtained cast sheet simultaneously in two perpendicular directions by means of a tenter

frame (see paragraphs [0018], [0019] and [0096]). In contrast, for the manufacture of the film of example 1 of D1 the resins are first extruded through an annular die to produce a tubing which is afterwards bi-axially oriented by stretching in the longitudinal and transverse directions using a trapped bubble.

6.3 The opponent also asserted that the film of example 1 inherently had a modulus value falling within the claimed range. These assertions were based on the one hand on theoretical calculations in view of D3 and D4 and on the other hand on the reworking of example 1 of D1 (see D23-D29).

6.4 Theoretical calculations

6.4.1 Already with the notice of opposition the opponent had provided calculations based on D3 and D4 arguing that the film of example 1 of D1 inherently had a modulus of 836,98 MPa corresponding to 8,370 kg/cm^2. D4 discloses an additive rule, elaborated for predicting the stiffness (modulus) of a model three-layer film (abstract; page 7, right column, lines 9-14). According to this rule, the film modulus is the sum of the respective product (thickness x modulus) of each film layer. The opponent had applied this additive rule to the eight-layer film of example 1 of D1. For the thickness of the individual layers of the film, the opponent took the values disclosed in example 1 of D1. However, for the modulus values of the resins of the individual layers, the opponent took values disclosed in D3 for resins similar to those of D1. Applying the same additive rule, the opponent submitted a second theoretical calculation during the oral proceedings before the board arguing that this second calculation corresponded to the opponent's worst-case scenario,

i.e. taking from D3 the lowest possible modulus values for the resins of the individual layers; this led to a film modulus of 6,716 kg/cm^2, still falling within the claimed range.

However, these calculations were based on the assumption that the model additive rule of D4, established for a three-layer film structure, could be applied to the more complicated eight-layer film of example 1 of D1. This assumption is not credible. D4 concerns the tensile behaviour of very specific resins, namely PA-6 and LDPE, in the form of monolayers and three-layer films (see page 7, left column under "Conclusions"; figure 13). The expression "multilayer films" used in D4 relates exclusively to a three-layer structure (see page 2, left column under "Preparation of Multilayer Films"); it cannot be extended. Furthermore, as the patent proprietor correctly remarked, the model film used in D4 for the elaboration of the additive rule was different in other aspects from that of example 1 of D1, so any prediction about the modulus should be treated with caution. So, unlike D4 whose structure is LDPE/tie/PA-6 (a polyamide), the film of example 1 of D1 did not include a polyamide layer. Moreover, the model film of D4 was manufactured by co-extrusion of blown films, oriented only in the machine direction with an unknown stretching ratio, whereas the film of example 1 of D1 was manufactured by co-extrusion followed by trapped bubble bi-axial orientation.

In view of these differences, the board concurs with the patent proprietor that the calculation method is based on an approach involving simplifications, approximations and assumptions which introduce a degree

of uncertainty regarding the film modulus value thus obtained for example 1 of D1.

6.4.2 Furthermore, for these calculations the opponent used modulus values of resin materials taken from the lists of tables I and II of D3. These lists disclose resin materials common to packaging applications from various sources (Billmeyer, Daniels, Saechtling, Modern Plastics). However, these resin materials are disclosed in general terms (only by chemical name: PET, OPP, EVOH-blown film-44 mol%, EMA, EVA, PP-homopolymer, LLDPE) and correspond to rough approximations of the resin materials used in example 1 of D1. The use of these materials as equivalents to the materials of example 1 of D1 was based on the assumption that the modulus was similar for polymeric materials within the same class. This assumption is, however, contradicted by the evidence of D3 itself, which discloses that the values for the modulus for the same class of polymers vary over a range depending on the manufacturer (see table I). Moreover, D3 states that the preparation of the samples has an influence on the modulus, such as orientation, speed of quenching, moisture (for some polymers) or crystallinity (see page 1, under "Introduction", second and third paragraph). Therefore, on the basis of the acknowledged modulus variability in D3, it is not established beyond any reasonable doubt that there is no difference between the modulus values of the resins taken from D3 and those of the resins of the film of example 1 of D1.

6.4.3 But even if the model additive rule of D4 was a safe basis for the modulus calculation of the multilayer films of D1, and the modulus values provided in D3 represented reliable alternatives for the resins of example 1 of D1, these resins were not the only

alternatives. In this context, reference can be made to the patent proprietor's letter of 6 August 2012, which selected other plausible alternatives for the resins of example 1 of D1 and obtained a film modulus lower that 6,000 kg/cm^2 when applying the additive rule model of D4.

The board has no reason to dispute the correctness of the patent proprietor's calculations, and the opponent has not provided any convincing counter-arguments.

6.4.4 In view of the above, the board concludes that the theoretical calculations provided by the opponent did not clearly and unambiguously demonstrate that the multilayer film of example 1 of D1 inherently had a modulus higher than 6,000 kg/cm^2 in at least one direction.

6.5 Reworking of example 1 of D1

6.5.1 When reworking example 1 of D1, the opponent did not use all the resin materials disclosed therein for making the individual layers. The opponent justified its choice by stating that some of these materials were out of use when it reworked example 1. The question which thus arises is whether the reworking produced something which is indeed equivalent to the film of example 1 of D1.

Thus, component Exact 3128 from Exxon in the second layer of example 1 of D1 was replaced by Pl 1880G from Dow. However, these components are not equivalent, as can be seen from the comparison of their respective technical data sheets D23 and D24. The melting index of the substitute is lower while the density is higher.

Furthermore, while Exact 3128 resin contains butene as comonomer, PL 1880G resin contains octene. This difference plays a role particularly during orientation, because octene-based polyolefin resins are much easier to orient.

Regarding the core layer (fourth layer) in example 1 of D1, the EVOH EVAL LC E105A was replaced with EVAL SP 292B (D26). It appears that these components are not equivalent, because they are manufactured by different suppliers using different technologies, which have an impact on the orientability of the film.

The composition of the sixth layer was completely changed in terms of content of EVA (see data sheets D27/D28 and opponent's letter dated 20 January 2014, page 18 first paragraph): in example 1 of D1 the sixth layer contains 6.5 % EVA, whereas in the reworking example it is 9%.

6.5.2 Notwithstanding these differences and their impact on the modulus of the film, the opponent when reworking example 1 manufactured a film structure different from that of the film. The reworked film layers 3 and 5 of example 1 were combined in one layer, with the result that the reworked multilayer film had seven layers instead of eight.

6.5.3 On the basis of these differences it is concluded that the reworking of example 1 by the opponent does not provide the appropriate evidence that the film of example 1 of D1 inherently had a modulus higher than 6,000 kg/cm^2 in at least one direction.

6.6 Consequently, the subject-matter of claim 1 is novel over the disclosure of D1.

7. Novelty in view of D10

7.1 D10 relates to a heat-resistant wrap film, preferably used for packaging (see paragraph [0001]). Example 11 (see paragraphs [0081] and [0082]) discloses a three-layer film having the structure C-4/D-1/C-4:

The core layer D-1 is an ethylene-vinyl alcohol copolymer resin having a Tg at 57°C where ethylene is 39 mol% copolymerised, and the crystalline melting point is 171°C (see paragraph [0067]). D-1 does not contain any further ingredients such as polyamide or polyesters. Therefore the core layer of the three-layer film of example 11 of D10 is only composed of an ethylene-vinyl alcohol copolymer.

The outer layers C-4 are made of the following composition (see paragraph [0066]):

- 100 pbw of
  - 85 wt% of A-4 with
  - 15 wt% of a hydrogenated copolymer resin of ethylene (partially propylene)-carbon monoxide;
- 10 pbw of B-7; and
- 3 pbw of B-4.

A-4 is an aliphatic polyester resin (namely L-lactic acid 89 mol% and D-lactic acid 11 mol%) with a melting point of 126°C and a degree of crystallinity of 11% (see paragraph [0063]);
B-7 is glycerin diacetyl monolaurate; and
B-4 is epoxidised soybean-oil (see paragraph [0065]).

In view of the composition of outer layers C-4, example 11 of D10 discloses a multilayer film comprising a first outer layer comprising a polyester

and a second outer layer comprising an ethylene/ propylene copolymer.

7.2 However, regarding the component "hydrogenated copolymer resin of ethylene (partially propylene)-carbon monoxide" there is no indication as to the amount of each one of the three monomers, namely ethylene, propylene and carbon monoxide, the degree of polymerisation and the degree of hydrogenation of the resulting copolymer. As the patent proprietor correctly stated, in the absence of this information hundreds of resins, with very different properties, fall under the vague definition of the resin of example 11 of D10. Furthermore, D10 does not provide any manufacturing process or any characterising parameter such as density or melt flow index, let alone any trade name or supplier, of this resin of example 11. The result is that this copolymer resin is not an enabling disclosure.

Another argument against the reproducibility of example 11 of D10 is the technical evidence of D15, which shows that many process parameters need to be controlled for the manufacture of the film. The proprietor's trials, carried out using a conventional process, demonstrated that it was very difficult to incorporate the high amounts of oils B-7 and B-4 into the resin masterbatch. Furthermore, the various resins appeared to lack compatibility. Thus, without any guidance as to the compounding step (equipment and conditions) the spaghetti formed at the exit of the extrusion die had very thin threads and the pellets into which they were cut were sticky. In view of the difficulties faced by the proprietor when extruding the tape, it is concluded that key information relating to this step is missing from D10. Furthermore, the

orientation step of D10, carried out at 65°C, was shown in D15 to be too low to allow film drawing without breakage.

The above-noted deficiencies regarding the definition of the resins used for the layers of the film, the process conditions and the equipment used, mean that the film of example 11 of D10 does not constitute an enabling prior-art disclosure.

7.3 Notwithstanding the above conclusion, the modulus of the film of example 11 of D10 does not clearly and unambiguously fall within the range of claim 1. Reference is made to figure 3 in paragraph [0082], which discloses a modulus of 90, which in the light of paragraphs [0009] and [0059] is expressed in kg/mm^2. The skilled person is aware that 90 kg/mm^2 correspond to 9,000kg/cm^2. However, regarding the method for measuring the modulus, paragraph [0059] discloses:

"The technique for measurement of properties and the like used in the invention are as follows: (1) Tensile modulus is measured in accordance with ASTM-D882. A film stretch stress is converted into 100 % at the time of 2 % stretching in the lateral and horizontal directions, to the direction of the flow of an extruded film (1), and is expressed in a median of thickness-based values, and sample sizes are expressed in modulus (unit: kg/mm^2) of a median at n=5".

On the basis of the above disclosure, the method of D10 is not clearly and unambiguously the same as the ASTM-D882 method used in the patent in suit; as the patent proprietor stated, the disclosure of paragraph [0059] could concern a modification of the method of the patent in suit. Therefore, it cannot be

concluded beyond any reasonable doubt that the 9,000 kg/cm^2 of example 11 fall within the modulus range of claim 1. Also for this reason example 11 of D10 is not novelty-destroying for the subject-matter of claim 1.

7.4 Consequently, the subject-matter of claim 1 is novel also over the disclosure of D10.

8. Inventive step

8.1 Closest prior art

The patent in suit is concerned with packaging materials and their manufacture (see paragraphs [0001] and [0002]). Its aim is to provide films useful for most current packaging systems, which require good machinability as well as good printability. These packaging systems need to be stiff, i.e. have a high modulus (see paragraph [0010]).

According to the patent in suit, such films comprised in the past a core layer made of polyamide or polyester beside the EVOH core layer in order to improve mechanical strength and stretching processability, and were manufactured using the "trapped bubble" process (see paragraphs [0003] to [0008]). These films are considered to represent the closest prior art.

D1 discloses multilayer bi-axially oriented films for packaging with no polyamide or polyester core layer but including other internal core layers, such as VLDPE, beside the EVOH core layer in order to enhance the film strength, secant modulus, extrusion stability and orientation (see column 1, lines 6-9; column 3, lines 39-42; column 6, lines 41-44; column 8, lines 12-28; example 1). D1 principally concerns the shrink

characteristics of the multilayer films and does not mention any modulus value or range. Therefore it is more remote than the prior art cited in the patent in suit.

8.2 Technical problem

The technical problem underlying the patent in suit in the light of the closest prior art consists in the provision of a feasible film with a simpler structure (or an alternative structure) achieving the required good machinability, good printability and high modulus required for modern packaging material (see paragraph [0010]).

The solution is provided by the combination of the features of claim 1 which requires at least three layers: a first outer polyester layer, a second outer ethylene/propylene homo- or copolymer layer and a core EVOH layer, and no polyamide or polyester core layer, whereby the modulus in at least one direction is higher than 6,000 kg/cm^2 evaluated according to ASTM D882.

Such a film is feasibly manufactured by co-extruding the resins of the individual layers through a flat die and bi-axially orientating the extruded tape by simultaneous stretching in the two perpendicular directions by means of a tenter frame.

The technical problem is credibly solved as shown in the experimental part of the patent in suit (examples 1 and 2) and the additional technical evidence submitted by the patent proprietor (D30). The latter compares the various manufacturing methods such as double bubble technology, triple bubble technology, sequential tenter frame technology and simultaneous tenter frame

technology. D30 shows that only simultaneous tenter frame technology was able to provide films of the claimed structure and modulus. The double bubble technique did not provide a feasible film due to the instability of the extruded tape, the triple bubble technique provided a good quality tape but did not allow orientation, and the sequential tenter frame technique did not allow the orientation of the film in the transverse direction as the first stretching in the longitudinal direction imparted high crystallinity to the structure, which made the following transverse stretching impossible and led to film breakage.

8.3 Obviousness

The skilled person starting from the closest prior art and aiming at the provision of a simplified/alternative film structure by avoiding any polyamide or polyester core layer while maintaining the advantageous modulus of the film would not find any motivation in the art towards the claimed film structure based on a first outer polyester layer, a second outer polyolefin layer and an EVOH core layer. In fact, this goes against the teaching of the prior art, where the polyamide or polyester core layer provided the film with the required mechanical strength and stretching processability (D1: column 6, lines 41-44). If the skilled person wanted to avoid the use of this core layer, he would rather focus on the modification of the core layer as in D1, where in the structure of the core layer another layer, e.g. a VLDPE layer, is included in order to enhance the desired properties of the film (see column 8, lines 11-14). There was no pointer in the art to focus on the outer polyester layer in order to control the required stiffness properties. As the patent proprietor explained at the oral proceedings

before the board, the claimed film structure was "unbalanced" in terms of stiffness/modulus compared with the known film structures. "Unbalanced" meant that the required stiffness was controlled by the outer polyester layer, contrary to the prior art in which it was controlled by the core layer and was therefore "balanced". In the unbalanced structure the thickness of the outer polyester layer is adapted in order to meet the desired film requirements and can be up to 45% of the thickness of the overall structure (see patent in suit, paragraphs [0059] and [0060]). In contrast, D1 not only does not disclose such a thickness of the outer polyester layer but in fact points towards thinner outer layers, namely most preferably to layers with no more than 10% of the total thickness of the film for successful orientation (see column 6, lines 17-22). An unbalanced film according to claim 1 with an outer polyethylene terephthalate layer having a thickness of 30% was successfully manufactured by simultaneous tenter frame technology, as shown in the comparisons of D30. It is therefore concluded that the film structure according to claim 1 is not obvious in view of the prior art.

8.4 The opponent alleged that the solution was obvious in view of D3 and D4 which disclosed that the modulus of a layer, such as the polyester layer, could be increased by increasing its thickness. Although the disclosure of D3 and D4 is not disputed, the allegations of the opponent are based on an *ex post facto* analysis since, as set out above, the skilled person would find no motivation in the art to move from a balanced film structure to an unbalanced film structure. Even if he had considered this alternative, he would not have found in the art any pointer towards the successful

manufacture of such a film. Thus these allegations of the opponent must fail.

8.5 The opponent also alleged that the technical problem was not solved across the whole breadth of claim 1. However, several film variants, different in total thickness, polyester layer thickness, barrier layer thickness, sealant layer resins and polyester layer resins, were manufactured without significant problems.

8.6 Furthermore, contrary to the assertions of the opponent, it is neither appropriate nor necessary to insert the manufacturing process into claim 1. Claim 1 defines the multilayer film in terms of its structure, the composition of the components and its modulus. It is irrelevant whether only one method exists to make such a film, namely simultaneous tenter frame technology.

8.7 Finally, even if D1 was considered to represent the closest prior art, the result on inventive step would be the same. The opponent considered D1 as the most promising starting point towards the claimed invention because it discloses a film structure with no polyamide or polyester core layer. It has already been set out above that D1 requires the inclusion of a further layer in the core to compensate for the elimination of the polyamide or polyester layer. Moreover, D1 teaches making the polyester outer layer thinner rather than thicker. Thus, D1 provides the skilled person with no motivation towards an unbalanced film structure in which the modulus is to be controlled by the thickness of the outer polyester layer. Increasing the thickness of the outer polyester layer of D1 in view of D3 and D4 goes against the disclosure of D1. Therefore also this argument must fail.

9. In view of the above, the subject-matter of claim 1 of the main request is patentable.

10. Dependent claims 2-14, which correspond to preferred embodiments of the subject-matter of claim 1, are patentable *mutatis mutandis*. Claims 15 and 16, which correspond to a process for the manufacture of the films of claim 1, are also patentable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is maintained as granted.

The Registrar: The Chairman:

M. Cañueto Carbajo W. Sieber

Decision electronically authenticated