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**Datasheet for the decision  
of 12 May 2015**

**Case Number:** T 0352/13 - 3.3.09  
**Application Number:** 05103240.7  
**Publication Number:** 1591236  
**IPC:** B32B27/20, B32B27/32  
**Language of the proceedings:** EN

**Title of invention:**

Multilayer polypropylene film, co-extruded and heat-sealable to make hermetically closed, easily opened packages, and relative production method

**Patent Proprietor:**

TAGHLEEF INDUSTRIES SPA CON SOCIO UNICO

**Opponent:**

Treofan Germany GmbH & Co. KG

**Headword:**

**Relevant legal provisions:**

EPC Art. 83, 54, 56

**Keyword:**

Sufficiency of disclosure - (yes)  
Novelty - (yes)  
Inventive step - non-obvious alternative

**Decisions cited:**

G 0001/03, T 1272/12

**Catchword:**



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Case Number: T 0352/13 - 3.3.09

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.09**  
**of 12 May 2015**

**Appellant:**  
(Opponent)

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**Decision under appeal:**

**Decision of the Opposition Division of the  
European Patent Office posted on 27 November  
2012 rejecting the opposition filed against  
European patent No. 1591236 pursuant to Article  
101(2) EPC.**

**Composition of the Board:**

**Chairman** W. Sieber  
**Members:** J. Jardón Álvarez  
K. Garnett

## Summary of Facts and Submissions

I. This decision concerns the appeal filed by the opponent against the decision of the opposition division to reject the opposition filed against European patent No. 1 591 236 granted to TAGHLEEF INDUSTRIES SPA CON SOCIO UNICO.

II. The granted patent contained 12 claims, independent claims 1, 10 and 11 reading as follows:

"1. Heat-sealable multilayer polypropylene film used to make packages (20) able to be hermetically closed and easily opened, said film (10) comprising at least an inner layer (11), a central layer (12) and an outer layer (13), at least an interlayer (16) being present between said inner layer (11) and said central layer (12), said interlayer (16) consisting of a mixture of copolymer/terpolymer with the addition of a component which is able to support the working temperatures of the film (10) without melting, **characterized in that** said component is in the form of solid micrometric particles (14) and is added in a quantity such as to obtain a volumic density, intended as the distribution on a unitary volume of the intermediate layer (16), comprised between 30 and 50 kg/m<sup>3</sup> in the case of density of said layer (16) of  $\geq 0.85$  g/cm<sup>3</sup>, and comprised between 10 and 30 kg/m<sup>3</sup> in the case of density of said layer (16) of  $< 0.85$  g/cm<sup>3</sup>, wherein said component is chosen among CaCO<sub>3</sub>, silicon dioxide, or reticulated plastic materials such as polybutylene terephthalate (PBT), PMMA, organo-silicates or silicones."

"10. Package for foodstuffs (20) using the heat sealable multilayer film as in any of the previous claims."

"11. Method to produce a heat-sealable multilayer polypropylene film (10) as in claim 1, used to make packages (20) able to be hermetically closed and easily opened, said film (10) comprising at least an inner layer (11), a central layer (12), an outer layer (13), at least an interlayer (16) being able to be positioned between said inner layer (11) and said central layer (12), **characterized in that** in the copolymer/terpolymer mixture that makes up said interlayer (16) the addition is provided of a component in the form of solid micrometric particles that is able to support working temperatures of the film (10) without melting, in a quantity such as to obtain a volumic density, intended as the distribution on a unitary volume of the intermediate layer (16), comprised between 30 and 50 kg/m<sup>3</sup> in the case of density of said layer (16) of  $\geq 0.85$  g/cm<sup>3</sup>, and comprised between 10 and 30 kg/m<sup>3</sup> in the case of density of said layer (16) of  $< 0.85$  g/cm<sup>3</sup>."

Claims 2 to 9 and 12 were dependent claims.

III. The opponent, Treofan Germany GmbH & Co. KG, had requested revocation of the patent in its entirety on the grounds that the claimed subject-matter was neither novel nor inventive (Article 100(a) EPC), and that the patent did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b) EPC).

The documents cited during the opposition proceedings included:

D1: EP 0 826 491 B1;

D2: US 6 623 866 B2;

D3: US 6 326 068 B1;

D4: EP 0 715 951 A2;

D5: EP 0 775 574 A2;

D9: WO 97/30903 A1; and

D10: EP 1 176 003 A1.

IV. In its decision announced orally on 8 November 2012 and issued in writing on 27 November 2012 the opposition division rejected the opposition because in its view the invention was sufficiently disclosed; the subject-matter of claim 1 was novel over D1, D2, D5, D9 and D10, and involved an inventive step starting from D4 as the closest prior-art document.

V. On 5 February 2013 the opponent (in the following: the appellant) filed an appeal and paid the prescribed fee. With its statement of grounds of appeal filed on 8 April 2013, the appellant requested that the patent be revoked in its entirety. It also filed the following document:

D12: Datasheet "Typical Engineering Properties of Polypropylene", February 2010, INEOS Olefins & Polymers USA (2 pages).

VI. In its reply filed on 13 August 2013 the patent proprietor (in the following: the respondent) disputed the arguments submitted by the appellant and requested that the appeal be dismissed. It also filed the following document:

- D13: Food Packaging Technology, edited by R. Coles et al., pages 187-189, 260 and 261, 2003, Blackwell Publishing Ltd.
- VII. On 13 November 2014 the board dispatched a summons to oral proceedings. In the attached communication the board indicated the issues to be discussed during the oral proceedings.
- VIII. Further submissions in preparation for the oral proceedings were filed by the respondent on 10 April 2015 and by the appellant on 6 May 2015. The reply of the respondent included the following document:
- D14: Internet page: "[http://www.stf.aicha.de/en/thermoform-folien/pp\\_tiefziehfolie.html](http://www.stf.aicha.de/en/thermoform-folien/pp_tiefziehfolie.html)" (1 page).
- IX. On 12 May 2015 oral proceedings were held before the board.
- X. The arguments of the appellant, insofar as they are relevant for the present decision, may be summarised as follows:
- The invention was insufficiently disclosed because: (i) there was no information in the patent for the preparation of the claimed films; (ii) an essential feature of the films, namely that the central layer of the film should not comprise CaCO<sub>3</sub>, was missing; (iii) the term "reticulated" was incomprehensible; (iv) the "working temperature" referred to in the feature "able to support the working temperature of the film (10)" was not defined, so that it was impossible to define the proper "working

temperature"; and (v) the feature "volumic density, intended as the distribution on a unitary volume of the intermediate layer" was entirely incomprehensible and, apart from that, the patent did not specify the temperature at which the volumic density should be measured, although this parameter was clearly temperature dependent.

- The subject-matter of claim 1 was anticipated by the disclosure of D1, D2, D5, D9 and D10. The novelty objections resulted from the assumption that the feature concerning the amount of additive (expressed as volumic density) should be ignored, because this feature was not sufficiently disclosed. But even if this feature was considered, novelty should still be denied because the amount of additive used in the prior art significantly overlapped with the values of claim 1.
  
- The claimed subject-matter lacked inventive step starting from D4 as the closest prior-art document. Considering example 1 of D4 in particular, there were no advantages and/or effects achievable by the claimed films in comparison with those of D4. Therefore the problem underlying the invention was to be seen in the provision of further (alternative) films. The solution to this problem was obvious in view of D4 alone or in combination with the teaching of D1 and/or D3.

XI. The arguments of the respondent may be summarised as follows:



- The invention was sufficiently disclosed taking into account that the technology for the preparation of biaxially oriented polypropylene films was conventional and the skilled person was well aware of methods of preparation of such films. The objections of the appellant were not well-founded and resulted mainly from the reading of the patent with a mind not willing to understand its meaning and seeking to raise ambiguity objections where no ambiguity was present.
  
- None of the documents cited by the appellant disclosed a film having an additive in the amounts claimed. The calculations of the appellant were partly based on the values given in the description of D4 and partly on the values of the table, but these values were not consistent with each other, at least with respect to the film thickness. In any case, the claimed subject-matter was a novel selection within the broad teaching of each of the prior-art documents cited by the appellant.
  
- The invention was based on the unexpected finding that multilayer polypropylene films useful for making packages having good opening properties could be achieved by the combination of features of claim 1 while maintaining or achieving a high barrier to the passage of humidity, good machine workability, a satisfactory level of resistance in the seal and a good aesthetic effect. In particular the combined use of copolymer/terpolymer and calcium carbonate had the effect to provide a film with a good balance of physical properties such as decreased splicing tendency and

increased flexibility. Neither D4 alone nor taken in combination with D1/D3 or with common general knowledge rendered the claimed films obvious.

XII. The appellant requested that the decision under appeal be set aside and the European patent N° 1 591 236 be revoked.

XIII. The respondent requested that the appeal be dismissed.

### **Reasons for the Decision**

1. The appeal is admissible.

2. *Interpretation of claim 1*

2.1 Claim 1, with a feature analysis added by the board, reads as follows:

- F1: Heat-sealable multilayer polypropylene film
- F2: used to make packages (20) able to be hermetically closed and easily opened, said film (10) comprising
- F3: at least an inner layer (11),
- F4: a central layer (12) and
- F5: an outer layer (13),
- F6: at least an interlayer (16)
- F7: being present between said inner layer (11) and said central layer (12),
- F8: said interlayer (16) consisting of
- F9: a mixture of copolymer/terpolymer
- F10a: with a component which is able to support the working temperature of the film (10) without melting,

**characterized in that** said component

F10b:is in the form of solid micrometric particles (14)  
and

F10c:is added in a quantity such as to obtain a volumic  
density, intended as the distribution on a unitary  
volume of the intermediate layer (16), comprised  
between 30 and 50 kg/m<sup>3</sup> in the case of density of  
said layer (16) of  $\geq 0.85$  g/cm<sup>3</sup>, and comprised  
between 10 and 30 kg/m<sup>3</sup> in the case of density of  
said layer (16) of  $< 0.85$  g/cm<sup>3</sup>,

F10d:wherein said component is chosen among CaCO<sub>3</sub>  
silicon dioxide, or reticulated plastic materials  
such as polybutylene terephthalate (PBT), PMMA,  
organo-silicates or silicones.

- 2.2 Features F1 and F2 define the film as a multilayer film made of polypropylene and its intended use.
- 2.3 Features F3 to F7 define the layers of the film (at least four layers) and their position within the film without specifying their composition.
- 2.4 Lastly, features F8 to F10 define the interlayer (16).
  - 2.4.1 The interlayer consists of a mixture of copolymer/terpolymer (feature F9) and a further component which is actually the key to the present invention (features F10a to F10d). This component is defined by a functional property (feature F10a), by its physical form (feature F10b) and by its chemical nature (F10d), and it is present in the film in a given quantity depending on the density of the interlayer (feature F10c).

- 2.4.2 It was agreed between the parties that feature F9 should be interpreted as meaning "a mixture of copolymer **or** terpolymer".
- 2.4.3 The interpretation of features in dispute, namely F10a, F10c and F10d, is discussed below under sufficiency of disclosure.

### 3. *Sufficiency of disclosure*

- 3.1 The patent concerns a multilayer polypropylene film, used to make packages able to be hermetically closed and easily opened (see paragraph [0001]). The patent aims to improve on prior-art films and to provide films having adequate barrier properties, good machine workability, a satisfactory level of resistance in the seal and a good aesthetic effect and that are easy to open (see paragraphs [0025] and [0029]). Although there is no working example in the specification, the technology for the preparation of multilayer polypropylene films is standard in the field and the board agrees with the opposition division and the respondent that the skilled person knows, in principle, how to prepare such films.
- 3.2 The appellant considers the disclosure of the patent insufficient because in its view:
- (i) there is no information in the patent for the preparation of the claimed film, and no examples in accordance with the invention;
  - (ii) an essential feature, namely that the central layer of the film should not comprise calcium carbonate, is missing from the claim;

- (iii) the term "reticulated" in feature F10d is incomprehensible;
- (iv) the working temperature in feature F8 is not defined; and
- (v) the term "volumic density" in feature F10c is incomprehensible and, apart from that, the patent does not specify the temperature at which it should be measured.

3.3 The board finds these objections not convincing for the following reasons.

3.3.1 As indicated in 3.1 above, the preparation of multilayer polypropylene films is within the general knowledge of the skilled person, who would be able to carry out the invention merely by using his knowledge in the field of polypropylene plastic films. Polypropylene films closely related to the ones claimed are prepared in the prior-art documents cited in the proceedings. The methods therein disclosed are well within the knowledge of the skilled person and appropriate to prepare the claimed films.

According to the jurisprudence of the boards of appeal, examples are not mandatory if the skilled person is able to carry out the invention using his common general knowledge. Moreover, there is no evidence on file showing that a film as claimed could not be prepared.

3.3.2 Concerning (ii), it is noted that granted claim 1 embraces embodiments with and without calcium carbonate in the core layer, the presence of calcium carbonate being only a preferred feature of the invention (see

claim 4 and also paragraph [0056]). In any case, the skilled person would be able to prepare films both with and without calcium carbonate in the core layer. This objection cannot bring into question the sufficiency of disclosure.

3.3.3 The remaining objections of the appellant in relation to sufficiency of disclosure in fact concern the question whether the claims clearly define the subject-matter for which protection is sought, that is to say, are concerned with Article 84 EPC, which is not in itself a ground of opposition. In appellant's view these clarity objections result in a lack of sufficiency of disclosure because the skilled person would not know when he is working within the restricted area of the claim.

3.3.4 This is, however, not the case for the following reasons:

- As explained by the respondent, the term "reticulated" in claim 1 results from an incorrect translation from the Italian term "reticolate". The term is used in claim 1 and in paragraph [0046] to refer to "reticulated plastic materials, such as polybutylene terephthalate (PBT), PMMA, the organo-silicates or silicones". The board takes the view that given this context the skilled person would consider the only sensible meaning of "reticulated" to be "cross-linked plastic materials". The particles used in the polypropylene film according to feature F10d are therefore to be chosen among "calcium carbonate, silicon dioxide, or cross-linked plastic materials".

The appellant argued that the reference to polymers "such as PBT, PMMA, organo-silicates or silicones" would mean that the claim embraces non-cross-linked polymers, because the exemplified polymers would normally not be cross-linked. However, the wording of the claim is clear in that it embraces such polymers only when they are cross-linked (i.e., reticulated, in the wording of the claim).

- There is also no lack of clarity concerning the "working temperature of the film" in feature F10a. This is "the maximum temperature reached during the working process of the biaxially oriented polypropylene film" as stated in paragraph [0047] of the specification.
  
- Lastly, the feature "volumic density" is also not unclear. As stated by the respondent in its letter dated 11 March 2011, a volumic density of  $10 \text{ kg/m}^3$  calcium carbonate means that a unitary volume of the interlayer (a cubic block with sides of 1 m) contains 10 kg of calcium carbonate. The definition makes a comparison with prior-art films defining the amount of additive by weight percentage difficult, but it does not give rise to a lack of clarity of the claim. With regard to the temperature dependency when measuring the volumic density, the board agrees with the respondent that it would be clear for the skilled person that the density measurement should be made in standard conditions, i.e. at around ambient temperature, in fact the density declared from the producer of the polymer.

3.4 Consequently, the board concludes that the requirement of sufficiency of disclosure is met.

4. *Novelty*

4.1 The novelty of claim 1 was contested by the appellant in its statement of grounds of appeal having regard to the disclosure of D1, D2, D5, D9 and D10.

4.2 Document D1

4.2.1 D1 relates generally to multilayer films. In one aspect, D1 relates to a multilayer film comprising a first outer layer comprising a polymeric material; a second outer layer comprising a polymeric material; a core layer, disposed between the first and second outer layers, comprising a polymeric material; and a substrate layer, disposed between the core layer and the first outer layer, comprising a polymeric material and a particulate antiblocking agent. The embodiment of figure 2 illustrates this aspect of D1 and discloses a five layered film including a core layer, two outer layers and two substrate layers (one of them corresponding to the interlayer according to feature F6 of claim 1). The substrate layer preferably comprises an ethylene-based polymer, more preferably ethylene/alpha-olefin copolymer (see [0050]). The antiblocking agent may comprise mineral-based antiblocking agents such as, *inter alia*, silica sand, calcium carbonate (see [0051]) and organic materials such as cross-linked organic materials (see [0053]). The antiblocking agents are preferably present at a level of from 0.1 to 6 weight percent, such as 0.2 to 4 weight percent, and 0.3 to 3 weight percent, based on the weight of the substrate layer (see [0054]).



4.2.2 Although D1 does not define the amount of additive in terms of the volumic density as in feature F10c of claim 1, the appellant argued that the claimed range would fall within the broad range disclosed in D1 for the antiblocking agent.

This objection was supported by two calculations made in order to correlate volumic density and weight percentages. The first calculation was made using the volumic density of titanium oxide used in the working example of D4, and the second using the information given in D1 for films consisting of calcium carbonate and propylene copolymer.

4.2.3 The respondent contested the accuracy of these calculations made by the appellant insofar as they were made for titanium oxide, an additive not covered by the present claims. Moreover the calculations *per se* were not consistent and different results would have been obtained if another example of D4 were used.

4.2.4 The board notes that none of the prior-art documents mentions the volumic density as a parameter related to the amount of additive included in the interlayer. Thus a comparison of the subject-matter of claim 1 with the prior art is difficult. The board considers that the calculations made by the appellant to establish the relationship between the volumic density and the weight percentage of a component with respect to the whole layer are a fair attempt to compare the subject-matter of the claim with the disclosure of the prior art.

4.2.5 There is, however, no need for the board to investigate whether these calculations are correct. As discussed below, the subject-matter of claim 1 is not anticipated by the disclosure of D1 even if it is assumed that the

calculations are indeed correct, and thus that a volumic density of 30-50 kg/cm<sup>3</sup> corresponds to something around 3-5 wt% (figures also assumed by the opposition division, see point 2.2.3 of the opposition division's decision).

4.2.6 The respondent acknowledged that there is no specific embodiment in D1 having all the features of claim 1 but maintained that the document was novelty destroying because it was possible to combine different passages of the document. In this context the appellant pointed out that granted claim 1 also resulted from a similar combination of features separately disclosed in the application as filed. It was argued that a similar standard had to be applied for the concept of disclosure for the purposes of Articles 123 and 54 EPC, so that the claimed subject-matter lacked novelty over D1.

4.2.7 The board acknowledges novelty of the subject-matter of claim 1 over the disclosure of D1 because in order to arrive at an embodiment falling within the scope of the claim, a multiple selection from the teaching of D1 has to be made. In particular, it is necessary to make at least the following selections:

- select polypropylene (feature F1) from the list of polyolefins disclosed in paragraph [0034];
- select copolymers or terpolymers (feature F8) from the "polymers" referred in paragraph [0018];
- select calcium carbonate, silicon dioxide or cross-linked plastic materials (feature F10d) from the long list of antiblocking agents (see paragraphs [0051] to [0053]); and

- lastly, select the amount of additive (feature F10c) from the broad disclosure given in paragraph [0054].

Such a multiple selection is nowhere disclosed in D1. According to EPO practice, in the case of a "multiple selection", an opponent has to show that the "combined selection" emerges from the prior art, or that there is at least a pointer to such a combination. In the present case, however, a person skilled would have no reason when reading the disclosure of D1 to concentrate on the combination of features set out in claim 1. Such a combination is neither explicitly disclosed nor implicitly hinted at in D1, and is therefore not clearly and unambiguously derivable from D1. In fact, for each of these selections there are several equally possible alternatives mentioned in D1.

- 4.2.8 Concerning the argument of the appellant that the same standard has to be applied for the purposes of Articles 123 and 54 EPC, the board agrees that this approach is used in the EPO (see for example G 1/03, OJ 2004, 413, point 2.2.2 of the reasons; and T 1272/12 of 11 December 2014, point 9 of the reasons).

First of all, however, the board notes that Article 100(c) EPC was not raised as a ground of opposition and even if a mistake were to have been made when granting current claim 1, this does not mean that the appellant can rely on an equivalent mistake when it comes to assessing novelty. Secondly, it in fact appears that claim 1 as granted does not result from the arbitrary combination of features of different embodiments of the application as filed. Granted claim 1 results mainly from the combination of claims 2

to 5 as filed and the correction of an obvious error regarding the intermediate layer (16). The dependence of claims 3, 4 and 5 as filed from claim 2 as filed is a clear hint to the combination of the features of granted claim 1.

- 4.2.9 Concerning the further argument of the appellant that the subject-matter of claim 1 lacked novelty over D1 since the criteria for a selection invention were not met for the volumic density, the board would point out that novelty is acknowledged not because the claimed volumic density values are a new selection from the broad range disclosed in D1, but because the claimed combination of features results from a multiple selection within the teaching of D1.
- 4.2.10 For these reasons the board concludes that the subject-matter of claim 1 is novel over D1.
- 4.3 Document D2, D5, D9 and D10
- 4.3.1 D2 discloses multilayer films containing materials that improve surface properties by inclusion of specific additives (column 1, lines 6 to 8). It discloses a multilayer film comprising a first skin layer, a tie layer, comprising, for instance, propylene butene copolymer, and further including 0.05-2 % by weight of an additive, such as silica, calcium carbonate or cross-linked polymethacrylate, a core layer, and a second skin layer (column 1, line 66 to column 2, line 34).
- 4.3.2 D5 describes a multilayer film comprising a first top layer, an intermediate layer, comprising a sealable olefinic polymer, in particular a mixture or a blend of copolymer(s) and terpolymer(s) (see page 4, line 45 to

- page 5, line 28), a base layer, and a second top layer (page 6, lines 40 to 49). The intermediate layer comprises an antiblocking agent (page 5, lines 40 to 42), such as silicium dioxide, and calcium carbonate in an amount of 0.1 to 2 weight percent (page 7, lines 35 to 39).
- 4.3.3 D9 relates to an in-mold label film containing three or more layers containing a print skin layer, a heat seal layer and a core which is made of one or more layers (see page 3, paragraph 5). Polypropylene is *inter alia* mentioned as suitable material for the voided core (paragraph bridging pages 5 and 6). Calcium carbonate particles are mentioned as suitable void initiating particles without specificating the amount to be used.
- 4.3.4 D10 discloses multilayered films for in-mold decorating comprising (i) a thermoplastic resin film base layer; (ii) an interlayer overlying said base layer and comprising (a) a thermoplastic resin composition, and (b) at least one antistatic agent, and (iii) a heat-sealable resin layer overlying said interlayer (claim 1). In example 1, a five layered film of the structure B/A/C/II/III with a density of  $0.79 \text{ g/cm}^3$  is prepared wherein the layer C contains 42% of calcium carbonate.
- 4.3.5 It is not in dispute that none of D2, D5, D9 or D10 specifically discloses an embodiment having all the features of claim 1 in combination. The novelty objections of the appellant arise from the finding that the general teaching of these documents embraces and/or overlaps with the subject-matter of claim 1.
- 4.3.6 As with D1, in order to arrive at the subject-matter of claim 1 on the basis of any of D2, D5, D9 and/or D10

- the skilled person would have to make a multiple selection within the teaching of the document. In each case the skilled person would have to select at least an interlayer consisting of a mixture of copolymer or terpolymer (feature F9), the specific additives of feature F10d and the amount specified in feature F10c.
- 4.3.7 The combined selection of features claimed is neither explicitly disclosed in nor clearly and unambiguously derivable from any of D2, D5, D9 and/or D10, for similar reasons as given above for D1.
- 4.4 Novelty of the subject-matter of claim 1 in view of the cited prior art is therefore acknowledged.
5. *Inventive step*
- 5.1 The invention concerns heat-sealable, multilayer polypropylene films, used to make packages able to be hermetically closed and easily opened.
- 5.2 Closest prior art
- 5.2.1 The parties agreed that D4 represents the closest prior-art document. It discloses a heat-sealable, white-opaque, biaxially oriented, multilayer polypropylene film having at least three layers and comprising as essential layers a core layer K, at least one interlayer Z and at least one outer layer D according to the structure KZD (see page 2, lines 3 to 5, and 51 to 52). The choice of the number of layers depends primarily on the intended application, preference being given to four- and five-layered films with outer layers on both sides and having a structure DKZD or a symmetrical structure DZKZD (see page 2, lines 53 to 57).

5.2.2 The films of D4 have a low film density, a high degree of whiteness and, like the films of the patent in suit, a low tendency to split (see page 2, lines 31 to 34). The low tendency to split is particularly important for packaging applications in which the seal seam of the packaging is to be opened in a controlled manner, *i.e.* without splitting and without tearing (see page 2, lines 34 to 36).

5.2.3 The most relevant embodiment in D4 was also agreed to be example 1, disclosing a four-layered film of the structure DKZD, wherein the interlayer Z consists of 86.5% by weight of a propylene homopolymer; 8.5% by weight of TiO<sub>2</sub>, and 5% by weight of calcium carbonate (see page 8, lines 17 to 26). The density of the four layer film is 0.68 g/m<sup>3</sup> (see table on page 10) and the amount of calcium carbonate in the layer corresponds to a volumic density of 45 kg/m<sup>3</sup>, as calculated by the appellant.

5.3 Problem to be solved and its solution

5.3.1 Based on the results of the examples and comparative examples of D4, the respondent argued during the oral proceedings that the use of a copolymer or terpolymer (instead of a homopolymer) and a lower amount of calcium carbonate would result in improved properties in the claimed films, namely a decreased splicing tendency and an increased flexibility, when compared with the films of D4.

5.3.2 It is however noted that the values given in the table of D4 for the "tendency to split" and for the "flexural rigidity" do not allow any conclusion to be drawn as to an improvement of the claimed films over those of D4.

The composition of the films of both the example and the comparative examples of D4 is quite different from the composition of the films now claimed. The fact remains that there is no evidence on file showing any improvement of the claimed films over the films disclosed in D4.

5.3.3 Under these circumstances, the problem underlying the patent in suit has to be formulated in a manner that does not include any advantage over the disclosure of D4, that is to say, as being to provide alternative heat-sealable, multilayer polypropylene films having a good balance of physical properties, which allows an easy opening of the packages while ensuring adequate closing, *i.e.* good barrier properties (see paragraph [0029] of the specification).

5.3.4 This problem is credibly solved by the films of claim 1 which differ from those of example 1 of D4 essentially in the composition of the interlayer, namely by:

- (a) using a copolymer or terpolymer instead of a homopolymer;
- (b) omitting the 8.5% titanium dioxide; and
- (c) using a lower amount of calcium carbonate, the amount being such as to obtain a volumic density between 10 and 30 kg/m<sup>3</sup> (or between 30 and 50 kg/m<sup>3</sup> for films with a density  $\geq 0.85$  g/cm<sup>3</sup>).

5.3.5 The claimed films are said to have the desired good properties. According to the specification this is in particular achieved by the use in the interlayer of the claimed amounts of calcium carbonate or the other additives claimed which generate an alveolar structure having specific characteristics (see paragraph [0050]). This alveolar structure is said to be critical to



achieve the easy opening effect. When these films are used to pack dry food products, the presence of this component in the interlayer guarantees great resistance until the first tear, and then facilitates the progressive opening without the uncontrolled propagating to any other part of the package (see paragraph [0070]).

5.3.6 This finding has not been contested by the appellant, who only contested that there was any advantage or effect due to the claimed films.

#### 5.4 Obviousness

5.4.1 It remains to be decided whether, in view of the available prior-art documents, it would have been obvious for the skilled person to solve the above identified problem by the means claimed. The relevant question is whether the skilled person would have modified example 1 of D4 by (a) replacing the propylene homopolymer by a copolymer or terpolymer, (b) omitting the titanium dioxide and (c) reducing the amount of calcium carbonate.

5.4.2 The board can accept the argument of the appellant that the replacement of the homopolymer by a copolymer or terpolymer would be obvious for the skilled person in view of the prior art which already used copolymers for closely related films (see, for instance, D3, claim 1).

5.4.3 On the other hand, the board cannot accept the argument of the appellant that the other two modifications of the teaching of D4 would have been also obvious for the skilled person, for the following reasons:

- The presence of at least 2% by weight, preferably from 8 to 15% by weight, of a pigment (titanium oxide) in the interlayer is an essential feature of the invention of D4 (see claims 1 and 3; see also page 5, lines 13 to 18). The skilled person would not omit this feature from the teaching of D4.
  
- Moreover, there is no hint in D4 that the amount of calcium carbonate or any other additive of claim 1, in a quantity that depends on the density of the interlayer, could have any influence on the split characteristics of the film. In D4, calcium carbonate and/or the other "vacuole-inducing fillers" are used in relatively high amounts in the intermediate layer (see page 4, line 53 to 54) and the core layer (see page 3, lines 53 to 54) to give the films a characteristic pearl-like opaque appearance caused by light scattering at the "vacuole/polymer matrix" interfaces (page 3, line 59 to page 4, line 1).

5.4.4 The board also cannot accept the argument of the appellant that the skilled person would arrive at the claimed amount of calcium carbonate by combining the teaching of D4 with D1. In D1 calcium carbonate is used as antiblocking agent. D1 does not give any hint to the 'easy opening' characteristics of the films now claimed. It appears therefore that the appellant's argument has been made *a posteriori* in the knowledge of the invention.

5.5 In view of the above, the board concludes that the subject-matter of claim 1 involves an inventive step. By the same token, the subject-matter of claims 10 and 11, which relate, respectively, to a food package

for foodstuffs using the films of claim 1 and to a method of their preparation, and the subject-matter of dependent claims 2 to 9 and 12, also involve an inventive step.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:



M. Cañueto Carbajo

W. Sieber

Decision electronically authenticated