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**Datasheet for the decision  
of 14 February 2007**

**Case Number:** T 0708/05 - 3.3.09

**Application Number:** 92310894.8

**Publication Number:** 0545650

**IPC:** B32B 27/32

**Language of the proceedings:** EN

**Title of invention:**

Polymeric films

**Patentee:**

Treofan Germany GmbH & Co. KG

**Opponent:**

Exxon Chemical Patents, Inc.

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 54(3), 123(2)

**Keyword:**

"Main request, auxiliary request 1: Novelty (no)"

"New request submitted during oral proceedings - not admitted"

**Decisions cited:**

T 0153/85, T 1002/92, T 0594/01, G 0001/03, G 0002/03

**Catchword:**

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Case Number: T 0708/05 - 3.3.09

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.09  
of 14 February 2007

**Appellant:** Treofan Germany GmbH & Co. KG  
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**Representative:** Kremer, Viola  
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**Respondent:** Exxon Chemical Patents, Inc.  
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**Representative:** Uexküll & Stolberg  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office orally announced 2 March  
2005 and posted 23 March 2005 revoking European  
patent No. 0545650 pursuant to Article 102(1)  
EPC.

**Composition of the Board:**

**Chairman:** P. Kitzmantel  
**Members:** W. Ehrenreich  
M-B. Tardo-Dino

## Summary of Facts and Submissions

- I. Mention of the grant of European patent No. 0 545 650 in respect of European patent application No. 92 310 894.8, filed on 30 November 1992 in the name of *Courtaulds Films (Holdings) Limited* and transferred to *Hoechst Trespaphan GmbH, now Treofan Germany GmbH & Co. KG*, was announced on 7 June 2000.

The patent, entitled "*Polymeric Films*" was granted with eight claims, Claim 1 reading as follows:

"1. A polymeric film comprising five coextruded layers which have been biaxially oriented together, the film having a core layer of voided polypropylene homopolymer with a layer of substantially non-voided polypropylene homopolymer on both sides thereof, and an outer layer of a heat sealable polymer on each of the layers of substantially non-voided polypropylene homopolymer so that the film is heat sealable, the layers of substantially non-voided polypropylene homopolymer each having a thickness of from 1 to 5 $\mu$ m."

Claims 2 to 8 were, either directly or indirectly, dependent on Claim 1.

- II. Notice of opposition based on the grounds of Article 100(a) EPC was filed by *Exxon Chemical Patents Inc.* on 2 March 2001.

The Opponent requested revocation of the patent in its entirety because the claimed subject-matter lacked novelty and lacked an inventive step.

*Inter alia*, the following documents were cited:

- D1 WO-A 93/04860
- D2 US-A 4 698 261
- D3 EP-A 0 312 226.

D1 constitutes prior art according to Article 54(3) EPC.

III. Oral proceedings were first held on 12 March 2003 but were adjourned because of the then pending decision by the Enlarged Board of Appeal on disclaimers.

IV. With the letter dated 2 February 2005 the Patent Proprietor submitted a set of Claims 1 to 8 as basis for a new main request. Claim 1 of this request, differing from Claim 1 as granted by the quantification of the thicknesses of each of the outer layers, reads as follows:

"1. A polymeric film comprising five coextruded layers which have been biaxially oriented together, the film having a core layer of voided polypropylene homopolymer with a layer of substantially non-voided polypropylene homopolymer on both sides thereof, and an outer layer of a heat sealable polymer on each of the layers of substantially non-voided polypropylene homopolymer so that the film is heat sealable, the layers of substantially non-voided polypropylene homopolymer each having a thickness of from 1 to 5 $\mu$ m and wherein said outer layer each have a thickness from 1 to 2 $\mu$ m."

This amendment was attacked by the Opponent under Article 123(2) EPC at the adjourned oral proceedings before the Opposition Division, which took place on

2 March 2005. It was argued that there was no basis in column 2, lines 47 to 49 of the A-publication for the amendment that each outer layer (emphasis by the Board) has a thickness from 1 to 2 $\mu$ m.

- V. With the decision orally announced on 2 March 2005 and issued in writing on 23 March 2005 the Opposition Division revoked the patent.

It was held in the decision that the amendment in Claim 1 of the main request complied with Article 123(2) EPC and that the claimed subject-matter was novel over the cited prior art, in particular D1 constituting prior art according to Article 54(3) EPC, and D2. However, no inventive step was seen for the claimed subject-matter when taking D3 as the closest prior art.

As to the issue of inventive step the Opposition Division took the view that the four layer film according to the example of D3 exhibited the same good gloss and even better puncture resistance, as was established by the Opponent's test report submitted with the letter dated 1 February 2005. Therefore, the problem to be solved could only be seen in the provision of an alternative film. The variation, consisting of the replacement of one thick intermediate layer according to D3 by two thinner ones was, however, within the customary practice of a skilled person.

- VI. On 31 May 2005 the Patent Proprietor (hereinafter: the Appellant) lodged an appeal against the decision of the Opposition Division. The Statement of the Grounds of Appeal was filed on 1 August 2005.

The Appellant sought, as its main request, the maintenance of the patent on the basis of the request underlying the appealed decision and filed a set of Claims 1 to 8 as a basis for an auxiliary request 1. Claim 1 of the auxiliary request 1 differs from the corresponding Claim 1 of the main request in that it indicates that the amount of the voiding agent in the core layer is from 5 to 15% by weight based on the weight of the core layer. Claims 2 to 8 remain unchanged.

During the oral proceedings, which took place before the Board on 14 February 2007, novelty of the subject-matter of Claim 1 according to the main request vis à vis example 14 of D1 was discussed. Thereafter, the Appellant presented an amended Claim 1 of the main request, excluding the film described in example 14 of D1 by a disclaimer, as a basis for a new auxiliary request.

VII. The Opponent (hereinafter: the Respondent) maintained its objections raised in the proceedings before the Opposition Division against the main request, which were based on lack of novelty, lack of inventive step and non-compliance of the amendment in Claim 1 with Article 123(2) EPC. Similar objections were also raised against the subject-matter of the auxiliary request 1.

VIII. In the oral proceedings the following issues were of relevance:

- (a) amendment of Claim 1 according to the main request and the auxiliary request 1 - Article 123(2) EPC;

- (b) novelty of the subject-matter claimed in Claims 1 of the main request and the auxiliary request 1 over example 14 of D1 - Article 54(3) EPC;
- (c) admission into the appeal proceedings of the amended Claim 1 of the main request, presented by the Appellant in the oral hearing after the discussion of the above requests.

IX. The arguments of the Appellant with respect of the above issues were as follows:

- (a) Article 123(2) EPC

The disclosure in column 2, lines 47 to 49 of the A-publication "*The outer, heat seal layers will generally be of a conventional thickness for heat sealing, eg. from 1 to 2 microns*" would be considered by a skilled person as part of his general knowledge and under the aspect of technical utility. Because a skilled person was aware that production of multilayer films via coextrusion required adjustment of the extruder streams for each single layer, he would consider the above thickness values representative for each of the outer layers rather than for the sum of both. This all the more so as example 1 of the A-publication indicates that each of the heat seal layers is 1 micron thick.

- (b) Novelty

The question whether example 14 of D1 unambiguously disclosed a film in which each of the two skin layers had a minimum thickness of 1  $\mu\text{m}$  as

claimed had to be answered in the negative for several reasons:

Example 14 referred back to example 10, which explained the coextrusion technology for the preparation of the multilayer film. According to this example the mixture of the fourth extruder - i.e. the extruder providing the polymer for the skin layers - was "*split into two streams to enable the formation of skin layers on each surface of the intermediate layers*". However nothing was said in example 10 about the two streams having equal thicknesses. It was therefore speculative to assume on the basis of the disclosure in example 14 "*the skin layers representing about 5 percent of the film thickness*" that the two layers were of equal thickness and each represented 2.5 percent of the film thickness, i.e. 0.96 $\mu$ m each.

It was also conceivable that the thickness value, calculated on the basis of the above "5 percent indication" and the "polygage" of 38.5 $\mu$ m, was an average value representing the sum of two unequal layer thicknesses, one of them being considerably below and the other being considerably above 0.96 $\mu$ m.

Quite apart from this, it was questionable whether the value for the polygage was the correct basis for the calculation of the layer thicknesses because the polygage did not take into account the inflation of the core layer caused by the



formation of the voids initiated by the voiding particles during film stretching.

Even in the case of an equal thickness of  $0.96\mu\text{m}$  for each of the skin layers, this value would be below the required minimum of  $1\mu\text{m}$  and therefore outside the claimed range of from 1 to  $2\mu\text{m}$  for each of the skin layers.

- (c) Admittance of the new request into the proceedings

In the light of the outcome of the novelty discussion in the oral proceedings vis à vis D1, it became necessary to exclude the film according to example 14 of D1. In order to cope with this situation, the limitation of the claimed subject-matter by incorporating a disclaimer into Claim 1 of the main request should be admitted.

- X. The Respondent argued as follows:

- (a) Article 123(2) EPC

The disclosure in column 2, lines 47 to 49 of the A-publication did not unambiguously define the thickness of 1 to  $2\mu\text{m}$  for each of the heat-seal layers.

Therefore, and because heat seal layer thicknesses between 0.5 and  $2\mu\text{m}$  were usual in the prior art, this disclosure left room for interpretation by a skilled person whether it related to the thickness of each heat seal layer or to the sum of both. The amendment in Claim 1 by selecting one of the two possible, but not expressly indicated, variants

had therefore no basis in the application as filed and contravened Article 123(2) EPC.

(b) Novelty over D1

When considering the question whether the thicknesses of the two skin layers of the film according to example 14 are equal or not, the general description of D1 had to be taken into account. According to page 7, lines 24 to 28 it was clearly stated that a preferred five-layer structure includes skin layers having thicknesses of about 2.5% each (emphasis by the Board). The assumption that example 14 describes a film wherein each of the skin layers amounted to 2.5% of the total film thickness (i.e. 5% in total) was therefore well-founded.

Polygagage was a film thickness measure expressing the quotient resulting from dividing the basis weight of the unfilled polymer film by the polymer density.

It was furthermore a fact that during biaxial orientation of unfilled multilayer films, the thickness of each single layer decreased proportionally to the stretching ratio. Because of this proportional dependency, the percental thickness fraction of each layer with respect to the total film thickness did not change before and after stretching.

The indication in example 14 of D1 that the polygagage of the - biaxially stretched - film was 38.5 $\mu$ m and that the skin layers represented 5% of the thickness of the coextruded - non-stretched -

film could therefore be used directly for the calculation of the total skin layer thickness of the stretched multilayer film. Multiplication of the polygauge by 0.05 led to a total skin layer thickness of  $1.925\mu\text{m}$  and to a value of 0.96 (2.5%) for each of the layers.

For this calculation, the non-proportional thickness change of the filled core layer caused by inflation and formation of the micro voids during stretching was irrelevant because this behaviour had no influence on the proportional thickness change of the unfilled skin layers. The thickness calculation on the basis of the polygauge value resulting in  $0.96\mu\text{m}$  for each of the skin layers was therefore correct.

Layer thicknesses of multilayer films were usually stated with only one digit after the comma. This fact emerged from the prior art documents D2 and D3 and the figures given in the patent specification itself.

It was furthermore a general rule to round an experimental value up in the case of an uncertain digit, here: the second digit after the comma is above 5.

When applying this rule to the film according to example 14 of D1, the calculated value of  $0.96\mu\text{m}$  for the skin layer had to be rounded up to  $1\mu\text{m}$ , corresponding to "about  $1\mu\text{m}$ ", i.e. a value which was within the claimed range of 1 to  $2\mu\text{m}$ .

It followed furthermore from the expert opinion disclosed in D10 (Polymer 46, 2005, pages 7132-7139) that - even in 2005 - it was in practice impossible to measure film layer thicknesses in

the  $1\mu\text{m}$  range with a deviation of less than  $\pm 5\%$  or, more realistically,  $\pm 10\%$ . The layer thickness emerging from example 14 of D1 should therefore be considered with the eyes of a skilled reader in accordance with the decision T 594/01.

The above led to a thickness range of from  $0.96 \pm 0.05\mu\text{m}$  or even  $\pm 0.1\mu\text{m}$  for the skin layer thickness of  $0.96\mu\text{m}$ . This range overlapped with the claimed range of from 1 to  $2\mu\text{m}$ .

Example 14 of D1, therefore, anticipated the film according to Claim 1 of the main request and, because 8% of the voiding agent was used in the core layer, Claim 1 according to the first auxiliary request was also anticipated.

(c) Admittance of the new request

The Appellant knew at the time of the proceedings before the Opposition Division that example 14 of D1 was critical for the novelty of the claimed film and that it was possible to exclude this example by a disclaimer in accordance with G 1/03 or G 2/03.

The Appellant's request seeking to exclude example 14 of D1 via a disclaimer, presented for the first time in the oral proceedings before the Board, was therefore late-filed and should not be admitted.

XI. The Appellant requested that the decision under appeal be set aside and the patent be maintained on the basis of Claims 1 to 8 of the main request filed with the grounds of appeal or, alternatively, on the basis of

amended Claim 1 of the main request filed during the oral proceedings or on the basis of auxiliary request 1 filed with the grounds of appeal.

XII. The Respondent requested that the appeal be dismissed.

### **Reasons for the Decision**

1. The appeal is admissible
2. Amendments - Article 123(2) EPC

The insertion of the feature "and wherein said outer layer each have a thickness from 1 to 2 $\mu$ m" into Claims 1 of the main request and the auxiliary request 1 does not violate the requirements of Article 123(2) EPC. The technical information provided in column 2, lines 47 to 49 of the A-publication that "*the outer, heat seal layers will generally be of a conventional thickness for heat sealing, e.g. from 1 to 2 microns*" would be interpreted by a skilled person with his general common knowledge - and in the absence of any contradictory statement - to apply to each of the two heat seal layers. In view of their function the only technically relevant information concerning their thickness concerns their individual thickness and not the sum of the two thickness values.

3. Novelty - Article 54(3) EPC

The document D1 describes in example 14 a biaxially oriented polymeric film comprising five coextruded layers, i.e. a core layer of a voided polypropylene

homopolymer, the voids being initiated by 8% by weight of a polybutylene terephthalate voiding agent, two non-voided polypropylene homopolymer layers on both sides of the core layer and two sealable skin layers of an ethylene-1-butene-polypropylene terpolymer - cf. example 14 which is directly and indirectly linked to examples 13 and 5 (concerning the biaxial orientation and the composition of the intermediate layers), example 12 (concerning the composition of the skin layers) and example 10 (concerning the composition of the voided core layer and the film preparation) in context with page 16, lines 23 to 31 (heat sealability of the skin layers).

The layers in the extruded, but not yet oriented, film of example 14 provide the following percental thicknesses in relation to the overall film thickness:

- core layer: 75%;
- intermediate layers: 20%;
- skin layers: 5%.

The Appellant's argument (see point VIII(b)) that the thicknesses of each of the intermediate layers and each of the skin layers, respectively, were not necessarily equal, is not convincing.

Having regard to the disclosure in the general description of D1 at page 7, lines 24 to 28, of a film with intermediate layers having a thickness of 8% each and skin layers having a thickness of 2.5% each, the conclusion that the film of example 14 also possesses a thickness profile with equal thicknesses for each of the intermediate and each of the skin layers is compelling. The Board therefore takes the position that

in the film of example 14 each of the intermediate layers represents 10% and each of the skin layers represents 2.5% of the overall film thickness.

The extruded and oriented film is further characterised by two thickness parameters:

- an optical gage of  $54\mu\text{m}$ , which represents the film thickness measured by optical methods and which includes the voided core layer inflated by the formation of the voids during stretching;
- a polygage of  $38.5\mu\text{m}$ . In this context, the Respondent convincingly argued in the oral proceedings (see point IX (b)) that "polygage" is the quotient resulting from the basis weight of the unfilled film divided by the polymer density and represents the theoretical film thickness disregarding the inflation of the core layer.

The Board agrees with the Respondent's argument in point IX(b) that the polygage is an appropriate basis for the calculation of the thickness of both the unvoided intermediate and the skin layers, in particular because the proportional dependency of the thickness decrease of these layers on the stretching ratio was not contested by the Appellant.

The inflation of the core layer is therefore irrelevant for the determination of the thicknesses of the intermediate and skin layers after stretching and, consequently, the polygage disregarding this inflation can be directly used in conjunction with the percental indications in example 14 for the calculation of these layer thicknesses.

Accordingly, the thicknesses are:

- 3.85 $\mu\text{m}$  for each of the intermediate layers and
- 0.9625 $\mu\text{m}$  for each of the skin layers.

The thickness for each of the intermediate layers lies wholly within the claimed range of from 1 to 5 $\mu\text{m}$ .

It was the Appellant's view that the value of 0.9625 $\mu\text{m}$  for each of the skin layers did not meet the requirements for an unambiguous novelty-anticipating disclosure because this value was below the required minimum of 1 $\mu\text{m}$ .

The Board cannot share this position and agrees with the Respondent's argument with reference to the decision T 594/01 (not published in the OJ EPO) that the above thickness calculation addresses a skilled person and that in the technical field of multilayer films, as a general rule, layer thicknesses are always stated with only one digit after the comma. A skilled person would therefore round the calculated value of 0.9625 $\mu\text{m}$  up to 1.0 $\mu\text{m}$ .

The Board is also in agreement with the Respondent's argument with reference to D10, that in 2005 - and consequently also before that time - it was not possible to determine layer thicknesses in the 1 $\mu\text{m}$  range with an error of lower than  $\pm$  5 to 10%. The calculated skin layer thickness of 0.9625 $\mu\text{m}$ , based on experimental data (adjustment of the extruder streams, determination of the polygage) has therefore realistically to be read as "about 1 $\mu\text{m}$ ".

In the light of the above, the Board concludes that the film claimed in Claim 1 of the main request is not



novel over the film described in example 14 of D1. The same applies to the film according to Claim 1 of auxiliary request 1, because the claimed range of 5 to 15% by weight for the voiding agent embraces the amount of 8% by weight of the voiding agent incorporated into the film of example 14 of D1.

The main request and the auxiliary request are therefore not allowable.

4. Admissibility of the amended Claim 1 of the main request filed during the oral proceedings as a basis for a new auxiliary request

Two main arguments were provided by the Appellant in order to justify the late filing of the above request:

- The fact that the Board has decided on novelty of the subject-matter of the main request and the auxiliary request 1 in a different way than the Opposition Division was a surprise to the Appellant. Thus, the necessity to reinsert the disclaimer - which had been the subject of discussion in the proceedings before the Opposition Division - arose only after the unexpected outcome of the novelty discussion vis à vis D1.
- The extensive discussion on "polygag" and the possible conclusions to be drawn for the skin layer thickness of the film according to example 14 of D1 led to certain misunderstandings which entailed a continuation of the debate on that issue after an interruption of the hearing.

The argument, that the Board took the opposite position on novelty from the Opposition Division, so that the Appellant was faced with an unexpected situation, is at variance with the fact that the question of the disclaimer had already been an issue before the Opposition Division.

It appears in particular from the annex to the summons to the first oral proceedings before the Opposition Division, as well from the submissions of the Opponent dated 12 February 2003, that the question of the admissibility of a disclaimer vis à vis example 14 of D1 was such a significant issue that it led to an adjournment of the proceedings until a final decision on the then pending cases G 1/03 and G 2/03 had been reached by the Enlarged Board of Appeal.

Bearing this situation in mind, the conclusion of the Opposition Division in the appealed decision issued after the adjourned oral proceedings that the subject-matter of Claim 1 was novel even without a disclaimer excluding example 14 of D1, is of no relevance.

Moreover, the fact that a board of appeal reverses a conclusion reached in a decision at first instance is a matter which a party must always be prepared for. In view thereof and since, as set out above, the Board's decision during the oral proceedings that example 14 of D1 was novelty destroying for the claimed subject-matter was a result fully within the framework of the entire opposition proceedings, the written appeal proceedings inclusive, the Appellant should have taken the appropriate steps in due time in order to respond to this possible outcome.

In this respect Article 10a and 10b of the Rules of Procedure of the Boards of Appeal has to be borne in mind. These Rules require a party to present its complete case at the outset of the appeal proceedings; amendments filed thereafter may be admitted and considered at the Board's discretion, which is to be exercised in view of *inter alia* the complexity of the new subject-matter, the current state of the proceedings and the need for procedural economy (cf. also T 1002/92 OJ EPO 1995, 605). In the present circumstances the introduction of a disclaimer to establish novelty at this late stage, a proposal which had previously been on the table but which had been abandoned in the meantime by the Appellant, is not conduct which warrants the exercise of the Board's discretion in the Appellant's favour. Such erratic conduct is at variance with the purpose of fair and duly structured appeal proceedings, which should be conducted so as to avoid it being left to the other party/parties to guess how they should organise their defence. Furthermore, the subject matter of this new request would still give rise to several objections and would therefore not amount to clearly allowable subject-matter (cf. T 153/85 not published in the OJ EPO). Thus, the issue of procedural economy speaks clearly against the admission of this request at this late stage in the proceedings.

Neither can the second argument of the Appellant concerning the lengthy discussion of the term "polygag" serve as a proper excuse for the very late filing of this request, because the discussion of this issue resulted in nothing new or significant for the outcome of the procedure. At the end of the discussion

it simply appeared that the misunderstandings which had arisen during this discussion had no influence on the eventual outcome and that the Respondent was right in its previous calculations and reasoning submitted in writing.

The amended Claim 1 of the main request submitted during the oral proceedings is therefore not admitted.

**Order**

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

The appeal is dismissed.

The Registrar

The Chairman

C. Moser

P. Kitzmantel