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**Datasheet for the decision
of 2 December 2014**

Case Number: T 1934/11 - 3.3.09

Application Number: 04015651.5

Publication Number: 1493560

IPC: B32B27/32, B32B27/20, B32B7/10,
G09F3/02

Language of the proceedings: EN

Title of invention:
Biaxially oriented multi-layer polypropylene film and the use thereof

Patent Proprietor:
Mitsui Chemicals Tohcello, Inc.

Opponent:
Treofan Germany GmbH & Co. KG

Headword:

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (no) none of the requests

Decisions cited:

Catchword:



**Beschwerdekammern
Boards of Appeal
Chambres de recours**

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Case Number: T 1934/11 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 2 December 2014

Appellant: Treofan Germany GmbH & Co. KG
(Opponent) Bergstrasse
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Representative: Mai, Dörr, Besier
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Respondent: Mitsui Chemicals Tohcello, Inc.
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
26 May 2011 concerning maintenance of the
European Patent No. 1493560 in amended form.**

Composition of the Board:

Chairman W. Sieber
Members: N. Perakis
K. Garnett

Summary of Facts and Submissions

- I. Mention of the grant of European patent No. 1 493 560 in the name of Tohcello Co Ltd (now Mitsui Chemicals Tohcello, Inc) was published on 17 October 2007 (Bulletin 2007/42).
- II. A notice of opposition was filed by Treofan Germany GmbH & Co KG requesting revocation of the patent in its entirety on the grounds of Article 100(a) (lack of novelty and lack of inventive step) and Article 100(b) EPC).

The following document was filed by the opponent:

D1: EP 408 971 B1.

- III. By an interlocutory decision announced orally on 27 January 2011 and issued in writing on 26 May 2011 the opposition division maintained the patent in amended form based on claims 1-9 of the main request.

Claim 1 of the main request read as follows:

"1. A biaxially oriented multi-layer polypropylene film comprising:

a biaxially oriented film base material layer obtainable from a propylene polymer composition, which comprises

70-95 % by weight of a propylene polymer (A),

3-15 % by weight of a calcium carbonate (B) having an average particle diameter of from 1.5 to 5 μm , which

particle surface is surface-treated with a higher fatty acid, and

2-15 % by weight of a titanium oxide (C);

a coating layer comprising the propylene polymer (A) laminated on one surface of the base material layer; and

a coating layer comprising the propylene polymer (A) or a heat sealable layer comprising a propylene/ α -olefin random copolymer (D), laminated on the other surface of the base material layer."

- IV. On 5 August 2011 the opponent (in the following: the appellant) filed an appeal against the decision and paid the appeal fee on the same day. On 23 September 2011 the appellant filed a statement setting out the grounds of appeal reiterating its objections of lack of sufficiency, lack of novelty and lack of inventive step.
- V. In its reply of 7 February 2012, the patent proprietor (in the following: the respondent) requested that the appeal be dismissed and submitted further sets of claims as auxiliary requests 1-4.

Claim 1 of auxiliary request 1 combines the features of claims 1 and 4 of the main request so that it contains the additional requirement for the calcium carbonate (B):

"and which has a maximum particle diameter of not more than 10 μm and a proportion of particles having a particle diameter of not more than 5 μm of not less than 80 % by weight".

Claim 1 of auxiliary request 2 differs from claim 1 of the main request only in that the amounts of the components of the propylene polymer composition have been slightly amended :

70-90 % by weight of a propylene polymer (A),
5-15 % by weight of a calcium carbonate (B), and
5-15 % by weight of a titanium oxide (C).

Claim 1 of auxiliary request 3 corresponds to claim 1 of auxiliary request 2 except that the heat sealable layer comprising a polypropylene/ α -olefin random copolymer (D) became mandatory, and polymer (D) is further specified:

"wherein the propylene/ α -olefin random copolymer (D) comprises a 1-butene/propylene random copolymer (E) in an amount of 5 to 50 % by weight".

Claim 1 of auxiliary request 4 corresponds to claim 1 of auxiliary request 2 except that the calcium carbonate (B) is further specified:

"the calcium carbonate (B) has a moisture content of not more than 0.5 % by weight as determined with JIS K 5101".

- VI. In a communication dated 21 May 2014 the board expressed its preliminary non-binding opinion regarding the patentability of the pending requests of the respondent.
- VII. By letter of 25 July 2014 the appellant filed observations on the communication of the board.

- VIII. By letter of 6 October 2014 the respondent announced that it would not attend the oral proceedings and would not file any further submissions.
- IX. On 2 December 2014 oral proceedings were held before the board in the absence of the respondent.
- X. The relevant arguments put forward by the appellant in its written submissions and during the oral proceedings may be summarised as follows:

Main request

- The subject-matter of claim 1 of the main request lacked novelty over example 1a of D1. An average particle diameter for the calcium carbonate particles varying from 1.5 to 5 μm as required by claim 1 did not exclude the presence of particles with a diameter smaller than 1.5 μm . Therefore, example 1a of D1, which disclosed particles with an average diameter of 1 μm , was novelty destroying for the subject-matter of claim 1. Furthermore, the surface-treatment of the particles of claim 1 with a higher fatty acid did not mean that these particles were coated with a higher fatty acid. Therefore, also the surface treatment did not distinguish the claimed calcium carbonate particles from those of example 1a of D1.
- The subject-matter of claim 1 did not involve an inventive step. D1, in particular example 1a, was acknowledged to represent the closest prior art. Even if the claimed film was considered to be new over D1 in view of the average particle diameter of the calcium carbonate and the particle surface

treatment, these differences did not solve the technical problem alleged by the respondent, namely the improvement of the opacifying property and surface gloss. The technical evidence of the patent in suit did not cover the breadth of the claim which related to any particle size distribution of the calcium carbonate particles. Only one type of particle size distribution for the calcium carbonate (B) was exemplified (paragraphs [0061] and [0078]), namely calcium carbonate with an average particle diameter of 1.9 μm , a maximum particle diameter of 8 μm , and a content of particles having a particle diameter of not more than 5 μm of 94 % by weight. Nothing in the patent made it credible that the effect on opacity and gloss properties of these very specific particles could be extended to any type of particle size distribution. Therefore the technical problem had to be redefined and should concern the provision of alternative multi-layer films. The claimed alternative films were however obvious in view of D1 itself, which disclosed calcium carbonate particles with an average diameter of up to 3 μm and the surface-coating of the calcium carbonate particles with a higher fatty acid.

Auxiliary requests 1-4

- Auxiliary requests 1-4 were not allowable for the reasons already set out by the board in its preliminary opinion. In particular, auxiliary request 1 was not allowable for inconsistency between independent claim 1 and dependent claims 2 and 3. Auxiliary requests 2 to 4 were also not allowable because of the absence of technical

evidence in the patent in suit showing that the further differentiating features of claim 1 of each of these auxiliary requests solved a technical problem other than the provision of an alternative. These alternatives were, however, obvious to the skilled person either on the basis of D1 or his general technical knowledge.

XI. The relevant arguments put forward by the respondent in its written submissions may be summarised as follows:

Main request

- The subject-matter of claim 1 of the main request was novel over example 1a of D1 as it did not disclose the claimed average diameter of the calcium carbonate particles or the surface-treatment of these particles. It was clear for the skilled person that a surface treatment of the calcium carbonate particles with a higher fatty acid would necessarily form a coating of such an acid on the surface of the particles.
- Example 1a of D1 was considered to represent the closest prior art.
- The technical effect caused by the differences of the claimed subject-matter over example 1a of D1 (the greater particle size and surface treatment) was identified to reside in an increased opacity and increased surface gloss.
- Reference was made to comparative example 4 and example 1 (see page 9, table 1 of the patent in suit) whose only distinguishing feature was the particle size. Comparison of these two examples

revealed that by increasing the particle size of the calcium carbonate particles, an increase in opacity property and simultaneously a higher surface gloss could be obtained.

- The average particle diameter of the calcium carbonate particles of 0.8 μm in comparative example 4 was sufficiently close to the 1 μm used in example 1a of D1 that this example could be considered to be representative of the closest prior art.
- Further samples were identified in the previously prepared data of the respondent having the same constitution as example 1a/comparative example 4 of the patent in suit, yet using calcium carbonate particles having an average particle diameter of 0.95 and 1.10 μm , respectively. These samples showed a surface gloss which was considerably lower than that of example 1a.
- The objective technical problem underlying the patent in suit vis-à-vis example 1a of D1 could thus be formulated as the provision of a polypropylene film having higher surface gloss and simultaneously increased viscosity.
- As none of the prior art references taught or suggested that this problem could be solved by increasing the average particle diameter of the calcium carbonate particles, the subject-matter of the main request involved an inventive step.

Auxiliary request 1

- Claim 1 of auxiliary request 1 related to a specific particle size distribution of the calcium carbonate particles. Example 1a of D1 did not disclose the claimed particle size distribution. Furthermore, the appellant had not provided any evidence showing that for particle size distributions not fulfilling the requirements of claim 1 the objective technical problem was not solved. The respondent, by ensuring that the particle size distribution fulfilled the requirement of claim 1, allowed the calcium carbonate to form voids which had uniform sizes, so that films could be prepared with excellent whiteness and free from unevenness. Nothing in the prior art suggested that this effect could be achieved by the specified particle size distribution. Thus claim 1 of auxiliary request 1 involved an inventive step.

Auxiliary request 2

- Claim 1 of auxiliary request 2 required that the minimum amounts of calcium carbonate and titanium oxide was at least 10 % by weight and the amount of polymer at the most 90 % by weight. That formed a further distinguishing feature over the disclosure of D1.

Auxiliary request 3

- Claim 1 of auxiliary request 3 required that the heat-sealable layer comprised a specific copolymer (E). That specific copolymer (E) enhanced the low-temperature heat-sealing strength of the resultant

biaxially oriented multi-layer polypropylene film. Nothing in the art suggested that this effect could be obtained by the claimed layer. Thus claim 1 of auxiliary request 3 involved an inventive step.

Auxiliary request 4

- Claim 1 of auxiliary request 4 required a specific moisture content of the calcium carbonate particles. This moisture content reduced the risk of foam generation. None of the prior-art documents suggested the adjustment of the moisture content in order to reduce the risk of foam generation. Thus claim 1 of auxiliary request 4 involved an inventive step.

XII. The appellant requested that the decision under appeal be set aside and that the patent be revoked in its entirety.

XIII. The respondent requested in writing that the appeal be dismissed or that the patent be maintained on the basis of one of auxiliary requests 1 to 4.

Reasons for the Decision

1. The appeal is admissible
2. Main request
 - 2.1 Novelty
 - 2.1.1 The appellant alleged that example 1a of D1 was novelty destroying for the subject-matter of claim 1 of the main request. Contrary to the appellant's allegations,

example 1a of D1 discloses calcium carbonate particles with an average particle size of 1 μm (see page 5, line 49), which is below an average particle diameter of from 1.5 to 5 μm as required by claim 1. Thus on the basis of this difference alone the claimed subject-matter is novel over the disclosure of D1.

2.1.2 The argument of the appellant that the calcium carbonate particles of example 1a of D1 will necessarily contain particles with a diameter of 1.5 μm in view of their particle size distribution is irrelevant. While indeed a calcium carbonate product having an average particle diameter of e.g. 1 μm will comprise particles having a smaller and a greater particle size, the average particle size is a unique value that is characteristic for the respective product.

2.2 Inventive step

2.2.1 The patent in suit relates to a biaxially oriented multi-layer polypropylene film with excellent opacifying property and surface gloss (see paragraph [0001]). Example 1a of D1 discloses a biaxially oriented multi-layer polypropylene film with excellent opacifying property and satisfactory surface gloss (page 6, lines 5-9; page 7, table). D1 lies in the technical field of the patent in suit, namely the field of biaxially oriented multi-layer polypropylene films, sets a similar technical goal to achieve, namely the improvement at least of the opacifying property (see page 2, lines 19-20), and has a large number of technical features in common. Therefore, the board, in agreement with the parties, considers that D1 represents the most promising starting point towards

the development of the biaxially oriented multi-layer polypropylene film of claim 1.

- 2.2.2 As already said above, the film of claim 1 of the main request differs from the film disclosed in example 1a of D1 (see page 5, line 49), at least in that it comprises calcium carbonate particles with an average particle diameter of from 1.5 to 5 μm .
- 2.2.3 The respondent has alleged that the technical problem underlying the claimed invention vis-à-vis example 1a of D1 should be seen in the provision of a polypropylene film having higher surface gloss and simultaneously increased opacity (see letter dated 7 February 2010, page 13, penultimate paragraph). The respondent has made reference to the technical evidence of the patent in suit and the additional technical evidence submitted with letter of 7 February 2010 (see page 13, second paragraph).
- 2.2.4 The board acknowledges that at first glance the technical data in the patent relied upon by the respondent (point XI above) appear to demonstrate an improvement in opacity and gloss properties when the average particle diameter is above 1.5 μm . However the examples of the patent relied upon to demonstrate the above mentioned technical effects have been carried out with a calcium carbonate product having a very specific particle size distribution, namely a maximum particle diameter of 8 μm and a content of particles having a particle diameter of not more than 5 μm of 94 % by weight. The board concurs with the appellant that it is simply not plausible that these effects can be achieved with calcium carbonate encompassing any particle size distribution. As a consequence, the technical problem needs to be

redefined in a less ambitious manner and has to be seen in the provision of a multi-layer polypropylene film alternative to that disclosed in D1.

2.2.5 The claimed alternative is however obvious to the skilled person in view of the disclosure of D1 itself. Indeed D1 discloses that the average particle diameter of the calcium carbonate can vary between 0.7 and 3.0 μm (page 3, lines 29-30) and that the calcium carbonate particle can be also surface-treated with a higher fatty acid (page 3, lines 43-46; claim 10).

2.3 In view of the above considerations the subject-matter of claim 1 of the main request does not involve an inventive step and this request is not allowable.

3. Auxiliary request 1

3.1 Compared with claim 1 of the main request claim 1 of auxiliary request 1 comprises additional features relating to the calcium carbonate (B):

"and which has a maximum particle diameter of not more than 10 μm and a proportion of particles having a particle diameter of not more than 5 μm of not less than 80 % by weight".

3.2 As with claim 1 of the main request, claim 1 of auxiliary request 1 defines two alternative layer constructions, namely A/A-B-C/A or A/A-B-C/D. Dependent claim 2 and 3 are a word by word repetition of the A/A-B-C/A alternative and the A/A-B-C/D alternative of claim 1, respectively, without however mentioning the further limitation relating to the particle size distribution. Although the board had pointed to this inconsistency under Article 84 EPC in its communication

of 21 May 2014 (item 7), the respondent merely announced in its letter of 6 October 2014 that it would make no further submissions and would not be represented at the oral proceedings before the board. The board sees no reason to change its mind about this objection.

3.3 Consequently, auxiliary request 1 is not allowable.

4. Auxiliary requests 2 to 4

4.1 Notwithstanding the fact that claim 1 of each of these requests might be objectionable under Article 123(2) EPC because the combination of features of each claim 1 does not find support in the application as filed (see the communication of the board, item 8), the subject-matter of each and every claim 1 of these requests still lacks an inventive step over example 1a of D1.

The board concurs with the appellant that the additional features of each claim 1, be it the specific amount of the constituents of the base material layer in auxiliary request 2, the specific propylene/ α -olefin random polymer in auxiliary request 3, or the specific moisture content of the calcium carbonate particles in auxiliary request 4 (see above section V), do not lead to any specific technical effect. There is simply no evidence in the patent for such a technical effect.

Therefore the technical problem is still to be seen in the provision of a biaxially oriented multi-layer polypropylene film alternative to the film disclosed in example 1a of D1.

The claimed alternative films are, however, obvious to the skilled person, who in view of D1 and his general

technical knowledge would adapt the amount of the constituents of the base material layer as in auxiliary request 2, or the specific propylene/ α -olefin random polymer as in auxiliary request 3, or even the specific moisture content of the calcium carbonate particles as in auxiliary request 4 during the exercise of his everyday activities without involving any inventive activity.

4.2 Therefore also claim 1 of auxiliary requests 2 to 4 do not involve an inventive step and these requests are likewise not allowable.

5. Since none of the requests of the respondent is considered to be allowable, the patent has to be revoked.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



M. Cañueto Carbajo

W. Sieber

Decision electronically authenticated