BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

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

Datasheet for the decision of 12 October 2006

Case Number: T 0043/04 - 3.3.09

Application Number: 94307288.4

Publication Number: 0648802

IPC: C08J 5/18

Language of the proceedings: EN

Title of invention:
Polyester films containing precipitated silica particles and calcined clay

Patentee:
DuPont Teijin Films U.S. Limited Partnership

Opponent:
Mitsubishi Polyester Film GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes)"

Decisions cited:
-

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0043/04 - 3.3.09

D E C I S I O N
of the Technical Board of Appeal 3.3.09
of 12 October 2006

Appellant: (Opponent)	Mitsubishi Polyester Film GmbH Rheingaustraße 190-196 D-65203 Wiesbaden (DE)
Representative:	Zounek, Nikolai Zounek Plate Schweitzer Patentanwaltskanzlei Rheingaustraße 196 D-65203 Wiesbaden (DE)
Respondent: (Patent Proprietor)	DuPont Teijin Films U.S. Limited Partnership Building 27 Barley Mill Plaza Route 141 & 48 Wilmington, DE 19805 (US)
Representative:	Cockerton, Bruce Roger Carpmaels & Ransford 43, Bloomsbury Square London WC1A 2RA (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted 4 November 2003 rejecting the opposition filed against European patent No. 0648802 pursuant to Article 102(2) EPC.**

Composition of the Board:

Chairman: P. Kitzmantel
Members: N. Perakis
M.-B. Tardo-Dino

Summary of Facts and Submissions

I. Mention of the grant of European patent No 0 648 802 in respect of European patent application No 94307288.4 in the name of ICI AMERICAS INC. (now DuPont Teijin Films U.S. Limited Partnership), which had been filed on 5 October 1994 claiming a US priority of 15 October 1993 (US 138540), was announced on 23 December 1998 (Bulletin 1998/52). The patent, entitled "Polyester films containing precipitated silica particles and calcined clay", was granted with ten claims. Independent Claim 1 reads as follows:

"1. A polyester film comprising a polyester polymer having incorporated therein a combination of (a) precipitated silica particles having an average particle size ranging between 1 and 15 microns present in an amount ranging between 25 ppm and 500 ppm by weight based on the weight of the polymer and (b) calcined clay present in an amount not exceeding 10,000 ppm by weight based on the weight of the polymer."

Claims 2 to 10 were dependent, directly or indirectly, on Claim 1.

II. A Notice of Opposition was filed against the patent by Mitsubishi Polyester Film GmbH on 23 September 1999. The Opponent requested the revocation of the patent in its full scope, relying on Article 100(a) EPC (lack of novelty of Claim 1 and lack of inventive step of Claims 1 to 10).

The opposition was *inter alia* supported by the following documents:

D1: EP-A-0 261 430
D2: US-A-3 884 870
D3: EP-A-0 532 172
D4: US-A-3 821 156
D6: JP-A-52 86471 (accompanied by an English translation)

III. By its decision orally announced on 17 October 2003 and issued in writing on 4 November 2003 the Opposition Division rejected the opposition.

The Opposition Division held in the appealed decision that the subject-matter of granted Claims 1 to 10 was novel over D6 and involved an inventive step over either D6 or D1 taken separately.

With regard to the issue of novelty, the Opposition Division decided that Example 9 of D6, considered in its original Japanese version and its English translation, was not novelty destroying for the polyester films of Claim 1, because the example did not disclose:

- either precipitated silica particles having a particle size within the claimed range of 1 and 15 μm
- or calcined clay.

With regard to the issue of inventive step, the Opposition Division considered that, starting either from D6 or D1 as closest state of the art, the technical problem to be solved was the provision of a

polyester film having good MD (machine direction) rating and low haze. The examples in the patent in suit as well as the experimental report D10 filed by the Patentee with its submission dated 27 July 2000 showed that this object was met. The Division found that none of the available prior art documents gave any hint to the skilled person to solve this problem in the claimed manner. The claimed subject-matter was therefore considered non-obvious.

IV. On 9 January 2004 the Opponent (Appellant) lodged an appeal against the decision of the Opposition Division and paid the appeal fee on the same day.

V. With the Statement setting out the Grounds of Appeal filed on 5 March 2004, the Appellant argued that the subject-matter of granted Claim 1 lacked novelty in view of the disclosure of documents D1 and D6.

With regard to D1, it contended that the particle sizes and the concentrations of the fillers disclosed in D1 overlapped with those of the claimed fillers, that the clay disclosed in D1 was necessarily a calcined clay, and that the spherical silica particles were precipitated silica particles, the latter in view of Product data sheets "Hi-Sil® Silicas" (D14) and "Sipernat®" (D15), which disclosed spherical particles of commercialized precipitated silicas.

With regard to D6, it argued that the Opposition Division was wrong as to its decision on the size of silica gel particles used in example 9, which was not 25 μm but 2.5 μm, and that the kaolin used in example 9 was necessarily calcined.

In respect of inventive step, the Appellant argued that D1, which could be considered as closest state of the art, solved the same technical problem as the patent in suit, namely the provision of a polyester film with high transparency and good windability, which necessarily included good MD-rating. It further argued that, in view of the D1's disclosure with regard to anhydrous calcium terephthalate, the skilled person would without any doubt use calcined clay in order to avoid undesirable particle agglomeration during the manufacture of the film.

An analogous conclusion was arrived at when alternatively considering D6 as closest prior art.

VI. With its letter of reply dated 23 July 2004 the Respondent submitted three sets of amended claims as bases for auxiliary requests I to III.

In essence, the Responded contested the novelty objections and argued that D1 as well as D6 failed to disclose calcined clay and that the inherency argument of the Appellant lacked proper evidence.

Furthermore, the Respondent also contested the Appellant's inventive step objection arguing that the Appellant has failed to properly appreciate the problem addressed by the opposed patent, which was in fact the provision of a film having the very specific handling property of reduced MD wrinkles formation (ie good MD rating), an undesirable phenomenon giving rise to non-uniform thickness in the transverse direction of the film and which was a key quality attribute of

commercial films. The Respondent argued on the basis of D17 ("Film and Sheeting Material", Kirk-Othmer Encyclopedia, 4th edition, 10, 1993, pages 761 to 766) that the MD rating could not be predicted on the basis of the film slip property, one of the handling properties referred to in the citations. The Respondent concluded that it was not obvious to modify the prior art films by introducing a calcined clay as a filler in order to improve the handling properties in terms of good MD rating as there was no mention or suggestion thereof in the prior art.

VII. In a letter dated 12 September 2006 the Respondent confirmed its previous requests and filed four further sets of claims as bases for auxiliary requests IV to VII.

VIII. On 12 October 2006 oral proceedings were held before the Board.

IX. The arguments put forward by the Appellant in its written submissions and at the oral proceedings can be summarized as follows:

- Though the claimed subject-matter was acknowledged to be novel over D1 and D6, because they did not disclose that kaolin, a mineral clay, was calcined, it lacked an inventive step over each of these documents considered individually.
- D1 and D6 solved the same technical problem as the patent in suit. These documents disclosed the combined improvement of optical properties and handling properties achieved by the combination of two fillers, a precipitated silica and kaolin of

particle size and concentrations falling within the claimed ranges or overlapping with them.

- Both D1 and D6 were concerned with the handling property of good windability of the polyester film and with the good appearance of the resulting roll, properties which implied the suppression of MD wrinkles, i.e. the attainment of the good MD rating which was sought after according to the opposed patent. This was particularly apparent from the passage in D1 relating to windability where reference was made to the examination of the appearance of the roll for "nodular protrusions" (page 12, lines 30 to 35), and from the qualification of the wound up roll of Comparative Example 7 of D6 as "polygonal" and of "inferior appearance".
- The windability could not be dissociated from the slip property.
- The use, according to the claimed invention, of clay in its calcined form was not related to a technical effect. In particular, no such effect could be derived from the data of the experimental report D10, since the envisaged comparison of calcined clay vs. hydrous clay was obscured by the simultaneous change of the clay's particle size.
- While D1 did not disclose calcined kaolin, its use was obvious to the person skilled in the art since the preparation and use in D1 of dry calcium terephthalate as filler material for the polyester film material suggested by analogy that clay, when used as a filler, should also be used in the same way, i.e. in dry/calcined form.
- Activated clay and ultra-fine anhydrous aluminum silicate disclosed as fillers in D6 must be

considered synonyms for calcined clay. Also in view of this disclosure, D6 suggested to the skilled person the replacement of the (hydrous) kaolin fine powder used according to example 9 of this document by its anhydrous form.

X. The Respondent essentially argued as follows:

- The patent in suit related to a problem not mentioned in D1 or D2, namely the combination of good optical properties with excellent handling properties, the handling properties comprising the reduction of MD wrinkles, which run along the machine direction of the film giving rise to a non-uniform thickness in the transverse direction of the film web.
- The formation of MD wrinkles was related to the manufacture of the polyester film but the reason for their formation was not yet elucidated.
- The slip properties of the film were not linked to the formation of MD wrinkles, since, as supported by D17, the former had to do with the coefficient of friction while the MD wrinkles formation was related to the process of the film manufacture.
- The windability, following the disclosure of D1, was related to the presence of homogeneously distributed nodal protrusions which according to D6 influenced the coefficient of friction of the film. Both documents were silent about any correlation between the afore-mentioned phenomena and the formation of MD wrinkles involving non-uniform thickness in the transverse direction of the film web.
- Neither D1 nor D6 dealt with the problem of MD wrinkles formation let alone its suppression.

- Neither D1 nor D6 disclosed the combination of precipitated silica with calcined clay, the latter not even been mentioned as an alternative for kaolin.
- The experimental report D10, in spite of the simultaneous variation of more than one parameter, showed an improvement in terms of MD rating of films containing calcined clay instead of hydrous clay.
- The skilled person found no motivation in the art for the replacement of (hydrous) kaolin in D1 or D6 by calcined clay. Because water and ethylene glycol were fully miscible there was also no technical necessity for the removal of the (crystal) water from kaolin when, in the polycondensation reaction with terephthalic acid, the latter was used, as suggested by D1, in the form of a slurry in ethylene glycol.

XI. The Appellant requested that the decision under appeal be set aside and that the patent be revoked in its entirety. The Appellant further declared that it no longer maintained its objection under the ground of novelty.

XII. The Respondent requested that the appeal be dismissed and the patent be maintained as granted (main request) or alternatively that the patent be maintained on the basis of one of the auxiliary requests I to VII.

Reasons for the Decision

1. The appeal is admissible.

2. *Novelty (Article 54 EPC)*

The Respondent announced at the oral proceedings before the Board that it withdrew the novelty objection previously raised against the claimed subject-matter on the basis of D1 and D6. The Board is satisfied that the novelty requirement is met.

3. *Inventive step (Article 56 EPC)*

3.1 Closest state of the art

The Board considers that documents D1 and D6 can equally be considered as closest state of the art since they both relate to the technical field of biaxially oriented films with improved optical and handling properties and because the corresponding films comprise the combination of fine particles of two fillers one being silica and the other kaolin.

In particular, D1 discloses biaxially oriented polyester films for magnetic recording media having excellent slipperiness and haze, having incorporated therein a combination of spherical silica particles with kaolin particles, kaolin being a mineral clay, the concentration and size of the particles falling within the claimed range (page 3, lines 12 to 20; page 5, lines 15 to 20; page 6, lines 8 to 39; page 7, lines 15 to 16; page 8, lines 20 to 26; page 12, lines 30 to 38;

page 26, table 7, example 28). However, D1 does not disclose that the kaolin is calcined.

Likewise, D6 discloses biaxially oriented films, including polyester films, with excellent mechanical properties such as slip properties, easy handling and transparency, and containing a first type of finely divided inorganic particles combined with a second type of finely divided inorganic particles other than the first (see the English translation: page 1, first two paragraphs; page 9, lines 10 to 14 and lines 23 to 25). In particular, example 9 (cf. pages 14 and 15, table 4) discloses a polyethylene terephthalate film having incorporated therein a combination of silica gel fine powder with kaolin particles, in a concentration and with particle sizes falling within the claimed ranges. D6 also does not disclose that the kaolin is calcined.

3.2 Problem to be solved and its solution

The technical problem underlying the opposed patent is the provision of a polyester film exhibiting high light transmittance, low haze and excellent handling properties (page 2, lines 31 to 32). One of the sought-after handling properties is the winding quality of the film (page 2, lines 12 to 13), and another is the reduced appearance of undesirable machine-direction (MD) wrinkles after winding up (page 2, lines 37 to 38), which can be visually identified (page 5, lines 23 to 25) and quantified as MD rating (page 4, lines 53 to 56). The MD rating is determined on a roll of at least 15,000 feet of wound up film and consists in measuring, in inches, the width of the raised film lines, dividing the total of such lines by the total

width of the film and normalizing to a range of from 1 to 10, with 1 representing zero visible lines.

The Board is satisfied by the explanation of the Respondent, confirmed by the Appellant, that the MD wrinkles formation is linked to the process of preparation of the polyester film, namely to irregularities of the film thickness in transverse direction caused by minute variations of the extrusion slit across its width and is considered as one of the possible defects of the film roll appearance. In view of the above, the MD wrinkles formation is to be distinguished from other defects of the film roll appearance (eg telescoping) linked in the state of the art to the windability characteristics of the film in relation to its slipperiness as expressed by the static or kinetic coefficient of friction (cf. D17 page 764, lines 3 to 7).

Thus the reference in D1 to film handling properties such as slipperiness cannot also be interpreted as a reference to the desirability of the prevention of MD wrinkles. Insofar as D1 does make reference to the appearance of the film roll by reporting the occurrence of a number of "nodal protrusions having a long diameter of at least 2 mm" (page 12, lines 30 to 38), such elevations of "insular" character cannot be equated with MD wrinkles, which occur as raised film lines travelling along the roll's circumference (patent specification page 4, lines 53 to 56).

Likewise, D6, which mentions handling properties in general (page 4, line 5; page 9, line 11), does not disclose MD wrinkles formation during the film

manufacture and is also not concerned with the MD wrinkles reduction. The polygonal shape of the film roll which is the result of a deficient winding quality of the film (page 15, last paragraph of Comparative Example 7), though addressing the roll's appearance, is again different from the MD wrinkles phenomenon, because the origin of this defect lies in an excessive static friction of the film; this is apparent from tables 2 to 7 of D6, according to which slip and handling properties are considered side-by-side as part of the aspects of the films' static friction coefficient and the ease of winding up.

Consequently, the objective technical problem underlying the claimed invention with regard to either D1 or D6 is the provision of a film combining good optical properties and excellent handling properties, with a special focus on the suppression of MD wrinkles.

The solution of this technical problem is provided by the incorporation in the polymer film during its manufacture of the combination of (a) precipitated silica particles having an average particle size ranging between 1 and 15 microns present in an amount ranging between 25 ppm and 500 ppm by weight based on the weight of the polymer and (b) calcined clay present in an amount not exceeding 10,000 ppm by weight based on the weight of the polymer.

The experimental evidence of the patent specification shows that the films according to the invention have a MD-rating of 1 to 6, which lies within the upper part of the MD-rating scale of 1 to 10.

Since the technical problem underlying the claimed invention is not suggested in either D1 or D6, there is no need to establish any improvement of the relevant properties (haze; MD rating) which may be achieved by the claimed invention over those of "comparative" films of the prior art. Consequently, the interpretation of the experimental report D10 is not of relevance for the assessment of inventive step.

3.3 Obviousness

The remaining question is thus whether the prior art suggests to a person skilled in the art the solution of the technical problem in the way proposed by Claim 1.

In the Board's judgment, a skilled person starting from the polyester film of either D1 or D6 would not arrive at the claimed polyester film in an obvious manner.

As explained above, the polyester film of granted Claim 1 is distinguished from the polyester films disclosed in D1 or D6 at least in that the clay particles, contained in the filler composition of the film in combination with the precipitated silica particles, are calcined clay particles.

The Appellant has not indicated any prior art document dealing with the problem underlying the claimed invention or disclosing the means of the claimed solution, namely a filler composition combining precipitated silica with calcined clay. The Board therefore comes to the conclusion that, in the absence of such disclosures, the skilled person starting from either D1 or D6 and aiming at the provision of a

polyester film combining good optical properties with excellent handling properties, including suppression of MD wrinkles, finds no indication in the art of how to solve this technical problem and consequently the claimed solution is considered non-obvious.

The Board does not concur with the Appellant's argument that the replacement in D1 (page 7, lines 15 to 16) of (hydrous) kaolin, clay or bentonite by their respective calcined form would be obvious to the person skilled in the art. As mentioned above, D1 is not only silent about any motivation for such a substitution, but also by not referring to the technical problem underlying the present invention fails to provide any reason to do so in the interests of a suppression of MD wrinkles. The Appellant's argument is consequently based on hindsight.

The Board also does not accept the argument of the Appellant in respect of D6, according to which the disclosure therein of "activated clay" and "ultra-fine anhydrous alumina silicate (page 5, line 1; page 7, line 3) would lead the skilled person in the art to replace the (hydrous) kaolin fine powder used in example 9 by these two compounds. First of all, D6 is not related to the technical problem underlying the present invention and therefore it fails to provide any motivation for the alleged replacement. Secondly, the activated clay of D6 corresponds to an alternative for the first filler, which in the concrete situation of example 9 is silica gel fine powder and not kaolin. Thirdly, since the term "ultra-fine anhydrous aluminum silicate" encompasses aluminosilicates of both natural (e.g. clay, kaolin) and synthetic origin, both having

different morphology and thus different properties, it cannot be equated with calcined clay. The Board hence concludes that also this argument of the Appellant is based on hindsight.

3.4 Conclusion

In the circumstances, the polyester film of Claim 1 of the main request involves an inventive step. As a corollary, the subject-matter of dependent claims 2 to 10, which relate to specific embodiments of the subject-matter of Claim 1, also involve an inventive step.

Hence, the ground of opposition under Article 100(a) EPC does not prejudice the maintenance of the patent as granted.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

G. Röhn P. Kitzmantel