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D E C I S I O N
of 4 May 2005

Case Number: T 0941/00 - 3.3.9

Application Number: 94300563.7

Publication Number: 0609060

IPC: B32B 27/36

Language of the proceedings: EN

Title of invention:

Biaxially oriented laminated polyester film and magnetic recording medium having the same as base film

Patentee:

Teijin Limited

Opponents:

Mitsubishi Polyester Film GmbH
Toray Industries, Inc.

Headword:

-

Relevant legal provisions:

EPC Art. 123(2), 54, 56

Keyword:

"Novelty (yes) - no direct and unambiguous disclosure"
"Inventive step (no) - obvious solution in view of general common knowledge"

Decisions cited:

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Catchword:

-



Case Number: T 0941/00 - 3.3.9

D E C I S I O N
of the Technical Board of Appeal 3.3.9
of 4 May 2005

Appellant: Teijin Limited
(Proprietor of the patent) 6 - 7, Minamihonmachi 1-chome
Chuo-ku
Osaka-shi
Osaka 541 - 0054 (JP)

Representative: Cockerton, Bruce Roger
Carpmaels & Ransford
43 - 45 Bloomsbury Square
London WC1A 2RA (GB)

Respondents: Mitsubishi Polyester Film GmbH
(Opponent 01) Rheingaustraße 190 - 196
D-65203 Wiesbaden (DE)

Representative: Schweitzer, Klaus, Dr.
Patentanwaltskanzlei Zounek
Industriepark Kalle-Albert
Gebäude H391
Rheingaustraße 190 - 196
D-65174 Wiesbaden (DE)

(Opponent 02) Toray Industries, Inc.
2 - 1 Nihonbashhi Muromachi 2-chome
Chuo-ku, Tokyo 103 (JP)

Representative: Kador & Partner
Corneliusstraße 15
D-80469 München (DE)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 31 July 2000
revoking European patent No. 0609060 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: P. Kitzmantel
Members: A.-T. Liu
M.-B. Tardo-Dino

Summary of Facts and Submissions

I. European patent No. 0 609 060 was revoked by decision of the Opposition Division dated 31 July 2000, taken at the oral proceedings on 20 June 2000, following two oppositions filed on the grounds of Article 100(a) and (c) EPC.

II. The decision was based on four sets of claims according to a main request and three auxiliary requests.

III. Of the five prior art documents cited in the written decision under appeal, reference will be made to the following in the present decision:

D1: English translation of JP-A-4-65 239

D5: English translation of JP-A-4-278 349

IV. Notice of appeal by the Patentee (Teijin Ltd) was received on 18 September 2000. With the Statement of the grounds of appeal dated 7 December 2000, the Appellant submitted a new set of claims, relinquishing all the previously submitted sets of claims. Claim 1 of the sole request on file was worded as follows:

"A biaxially oriented laminated polyester film comprising:

(A) a first thin polyester layer having a thickness of 0.5 to 2 μm , formed of an aromatic polyester containing;

- (a1) large-diameter inert particles having an average particle diameter, da_1 , of 0.4 to 2.0 μm and
- (a2) small-diameter inert particles having an average particle diameter, da_2 , of 0.05 to 0.3 μm , the content of the large-diameter inert particles (a1) being 0.05 to 0.5% by weight based on the first thin polyester layer, the content of the small-diameter inert particles (a2) being 0.05 to 0.5% by weight based on the first thin polyester layer,
- (B) a second polyester layer formed of an aromatic polyester containing:
 - (b1) large-diameter inert particles having an average particle diameter, db_1 , of 0.4 to 2.0 μm , and
- (C) a third thin polyester layer having a thickness of 0.6 to 3 μm formed of an aromatic polyester containing:
 - (c1) large-diameter inert particles having an average particle diameter, dc_1 , of 0.4 to 2.0 μm and
 - (c2) small-diameter inert particles having an average particle diameter, dc_2 , of 0.05 to 0.3 μm , the content of the large-diameter inert particles (c1) being 0.05 to 0.5% by weight based on the third thin polyester layer, the content of the small-diameter inert particles (c2) being 0.05 to 0.5% by weight based on the third thin polyester layer,

the first thin polyester layer, the second polyester layer and the third thin polyester layer being laminated in the above order, the biaxially oriented laminated polyester film satisfying the following expression (1),

$$0.6 < \frac{W_2 \cdot D_2}{W_1 \cdot D_{13}} < 1.5 \quad (1)$$

wherein:

W_1 is the content (wt.%) of the large-diameter inert particles (a1) in the first thin polyester layer,

W_2 is the content (wt.%) of the large-diameter inert particles (b1) in the second polyester layer

D_{13} is a total of the thickness (μm) of the first thin polyester layer and the thickness (μm) of the third thin polyester layer, and

D_2 is the thickness (μm) of the second polyester layer."

In the present decision, the numerical value of the quotient ($W_2 \cdot D_2 / W_1 \cdot D_{13}$) as in expression (1) of Claim 1 will be designated the "R-value" of the laminated film concerned.

V. The following documents were submitted by the Respondent - Opponent 01 (Mitsubishi Polyester Film GmbH) at the oral proceedings on 4 May 2005:

- A Japanese pamphlet entitled "SE-30C",
- A document showing calculations of the R-value for Example 1 of D5.

VI. The Appellant's arguments were as follows:

- It was impossible to understand the content of the pamphlet "SE-30C", which should in any event be disregarded, being a late filed document.
- The amendments to Claim 1 were allowable according to the case law of the EPO.
- The laminated film of Claim 1 was distinguishable from that according to Example 1 of D1 by the range of R-values and by the content of small-diameter inert particles (a2) in the first (outer) layer of the laminated film ranging from 0.05 to 0.5%.
- There was no proof that the alumina particles used in Example 1 of D5 were monodisperse. The aggregated size of these alumina particles would therefore exceed the upper limit of 0.3 μm set for the small-diameter particles size in Claim 1.
- Although D5 indicated that recycled polymer was used for producing the core layer in Example 1, it did not impose any constraint as to the source or nature of this recycled polymer. This document thus did not disclose W_2 , a parameter which was necessary for calculating the R-value.
- The technical problem to be solved was the provision of a laminated polyester film of consistent quality and made with recycled material.

- None of the prior art documents on file disclosed or suggested that it was crucial to adhere to the R-values as stipulated in Claim 1 for solving this technical problem.

VII. The Respondents essentially argued as follows:

- The amendment of the thickness of the third layer to the lower limit of 0.6 μm was not supported by the application documents as filed.
- The R-value for the laminated film in Example 1 of D1 was practically the same as the lower limit stipulated in Claim 1.
- Furthermore, the skilled person could deduce the content of the small-diameter particles in the first layer from the description of Example 1 of D1. The claimed laminated film was therefore anticipated by this disclosure.
- The alumina used in Example 1 of D5 was of δ -type which did not tend to aggregate. As a consequence, the aggregated particle size was the same as its primary particle size, which was within the range stipulated for the small-diameter inert particles in Claim 1.
- Furthermore, it was common knowledge that the edge trimmings produced during a process for manufacturing a biaxially oriented laminated film were always recycled in that process. Thus, even though it was not expressly indicated in D5, the skilled person would know that the recycled

polymer mentioned in Example 1 originated from such edge trimmings. With due consideration of this fact, the R-value calculated for this example would fall within the limits stipulated in Claim 1.

- In the event that novelty should be accepted, the film according to Claim 1 lacked an inventive step with regard to Example 1 of D5, in view of the general common knowledge.

VIII. The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of Claims 1 to 18 submitted with the Statement of the grounds of appeal.

The Respondents requested that the appeal be dismissed.

Reasons for the Decision

1. *Amendments*

- 1.1 The Appellant contended that, before the Opposition Division, the Respondent had withdrawn its objection under Article 100(c) EPC and, as a consequence, non-compliance with the requirements of Article 123(2) EPC was no longer a ground for opposition.

The Board wishes to observe that the question whether the opposition ground under Article 100(c) EPC is still part of the proceedings is only relevant to amendments made prior to the grant of the patent. In the present case, the text of Claim 1 was amended to read "a third thin polyester layer having a thickness of 0.6 to 3 μm ",

whilst Claim 1 as granted stipulated "a third thin polyester layer having a thickness of 0.5 to 3 μm ". Since this amendment to the lower limit of thickness (from 0.5 to 0.6) was made after the grant of the patent, the Board, pursuant to Article 102(3) EPC, must examine whether it complies *inter alia* with the requirements of Article 123(2) EPC.

- 1.2 It is common ground that the stipulated thickness range as such is not mentioned in the original application documents, which disclose a range of 0.4 to 3 μm (page 12, lines 28 to 29). It is also undisputed that the newly introduced lower limit of 0.6 μm has not been disclosed in general terms but taken from particular embodiments. However, the question as to whether the proposed amendment complies with the requirements of Article 123(2) EPC can be left open in the present case since this particular feature does not have any bearing on the assessment of novelty and inventive step (see in particular points 2.2, 2.3 and 3.4 below).

2. *Novelty*

- 2.1 Claim 1 is directed to a biaxially oriented laminated polyester film comprising a first thin polyester layer containing large-diameter inert particles having an average particle diameter of 0.4 to 2.0 μm and small-diameter inert particles having an average particle diameter of 0.05 to 0.3 μm , the content of the large-diameter inert particles being 0.05 to 0.5% by weight based on the first thin polyester layer, the content of the small-diameter inert particles being 0.05 to 0.5% by weight based on the first thin polyester layer. Furthermore, the film is such that the R-value, which

involves the content of the large-diameter inert particles in the first and second thin layers, and the thickness of the three layers, satisfies the relationship defined in expression (1) (see item IV above).

- 2.2 Document D1 discloses biaxially oriented laminated polyester films consisting of at least 3 layers, wherein at least one of the outermost layers contains inorganic particles of type A and type B (Claims 1 and 5). In Example 1, calcium and alumina, which are termed particles A and B, respectively correspond to the definition of the large-diameter and small-diameter inert particles contained in the first thin layer according to Claim 1.

However, whilst D1 indicates that the content of particle A in the polyethylene terephthalate master pellet is 1.0% by weight based on the polyester (page 19, last paragraph), it does not mention the content of particle B in the master pellet. Thus, it is undisputed that the content of the alumina particles in the outer layer of the laminated film according to Example 1 is neither explicitly disclosed nor can be calculated from the explicit disclosure of D1.

To the Board, the statement in the subsequent paragraph (page 20, first paragraph) that "the master pellet of the particle B was obtained similarly as described above" can only imply that the process steps for making the master pellet of particle B should be similar to those for preparing the master pellet of particle A. The Board, however, holds in favour of the Appellant that the skilled person does not directly and

unambiguously infer from that reference that the content of particle B in the master pellet should also be the same as for particle A. Since this piece of information is lacking from the disclosure of D1, the subject-matter of Claim 1 is at least distinguished from the laminated film according to D1 by the content of small-diameter inert particles in the outer layer.

- 2.3 Document D5 also relates to biaxially oriented laminated polyester film consisting of at least three layers.
- 2.3.1 In Example 1, both outer layers have a thickness of 1.0 μm and contain 0.3 wt% of calcium carbonate particles having a mean particle size of 0.78 μm (particles A) and 0,3 wt% of δ -type alumina particles having a mean primary particle size of 0.1 μm (particles B). According to the Respondents, δ -type alumina particles do not tend to aggregate, so that the indicated particle size would be the same as the particle (aggregate) size of the small-diameter inert particles used according to the patent in suit. This submission, which is not supported by any evidence, was strongly contested by the Appellant. It is therefore open to discussion as to whether particles B of Example 1 of D5 correspond to the definition of the small-diameter inert particles in Claim 1. The Board, however, decides to leave this question open since it does not affect the findings on novelty and inventive step for the reasons elaborated below (points 2.3.2 and 3.6.2).
- 2.3.2 According to the description of Example 1 of D5, the 11 μm thick core layer is prepared from master pellets of particles A, recycled polymer and pellets containing no

particles. D5, however, does not give any detail about the recycled polymer, neither in general terms nor for that particular example. D5 thus does not clearly and unambiguously disclose whether the recycled polymer contains any particles corresponding to the definition of large-diameter particle in Claim 1. Consequently, it fails to disclose the total content of such large-diameter particles in the core layer. Without this piece of information, the reader of D5 is unable to determine the R-value for the laminated film. As a consequence, the Board concludes that Example 1 does not contain all the data necessary for destroying the novelty of the subject-matter of Claim 1.

2.4 The Respondents have not made reference to any other documents as novelty-destroying for the subject-matter of Claim 1. The claimed laminated polyester film is therefore new with regard to the available prior art.

3. *Inventive step*

3.1 The patent in suit is directed to a biaxially oriented laminated polyester film which satisfies contradicting requirements such as improvement in the lubricity of the film surface and improvement in electronic characteristics, and which can be produced at low costs (page 2, lines 54 to 56).

3.2 In view of the above object that the patent in suit sets out to achieve, the Board holds that D5 comprises the closest prior art since it also seeks to provide a biaxially oriented laminated polyester film with the same characteristics, namely good high-speed scraping and electro-magnetic conversion characteristics (page 3,

paragraph [0004]). Furthermore, by aiming at improving the productivity by using recycled films, it also tackles the problem of reducing the production costs (paragraph bridging pages 20 and 21). In the Board's view, D1 is not as relevant as D5 given that it does not address the problem of production costs.

The Appellant's argument that D5 is less relevant than D1 because it does not deal with the problem of variations in surface roughness cannot be accepted. In the paragraph directed to the "Advantages of the Invention", it is expressly indicated in D5 that, in the laminated polyester film disclosed therein, "hard inorganic particles having a predetermined particle diameter and existing in a predetermined amount form uniform protrusions that are resistant to scraping, on the surface of a thin-layer outermost surface layer portion on at least one side of the film, so as to form a desired surface roughness condition" (page 20, paragraph [0037]). To the Board, this description clearly shows that D5 has recognised the significance of the surface roughness of the outer layer for the desired film characteristics.

3.3 The Appellant has not submitted that the laminated films according to present Claim 1 exhibit any improvement as compared to those disclosed in D5. The Board therefore holds that, with regard to D5, the technical problem to be solved is the provision of a laminated film with similar properties, obtainable at similarly advantageous costs.

3.4 In order to solve the technical problem indicated above, the patent in suit proposes in Claim 1 a laminated film

which is essentially distinguished from that of Example 1 of D5 only in the stipulated range of R-values (see also points 2.3.1 and 2.3.2).

3.5 It is plausible that the claimed laminated polyester film solves the technical problem indicated above (point 3.3).

3.6 The Board, however, cannot accept the Appellant's argument that the proposed limits of R-values as stipulated in Claim 1 are prima facie non-obvious for the following reasons.

3.6.1 It is common ground that D5 does not indicate the nature or the source of the recycled polymer used for making the core layer in Example 1 (see also point 2.3.1 supra). However, it is also an undisputed fact that edge trimmings of the stretched polymer film are normally generated in such a process for producing a biaxially oriented laminated film. As also established in the patent in suit, it is common in the art to recycle these edge trimmings for use as part of the raw material in the same production process (page 2, lines 40 to 48). In view of this general common knowledge, it is most obvious to the skilled person that, when applying the teaching of Example 1 of D5, the edge trimmings should be used as recycled polymer in the core layer. The calculations submitted by the Respondents at the oral proceedings of 4 May 2005 show that, when these trimmings are used as recycled polymer, the R-value for the laminated film of Example 1 will be automatically within the limits stipulated in Claim 1. The Appellant has not contested these calculations, let alone proved them wrong.

3.6.2 The Board does not ignore the fact that there is still doubt as to whether the particle size of the δ -type alumina (particles B) contained in the outer layers of Example 1 of D5 corresponds to that of the small-diameter particles stipulated in Claim 1 (see point 2.3 supra). However, as submitted by the Respondents at the oral proceedings and not refuted by the Appellant, the actual size of these particles does not have any bearing on the technical problem here concerned. Also, as clearly arises from the equation (1) of Claim 1, the R-value, essential for solving the present technical problem, does not depend on the size of the small-diameter particles. The Board thus observes that there is no argument or evidence relating to the criticality of the upper limit of 0.3 μm for the particle size range of the small-diameter inert particles. Under these circumstances, the Board holds that the determination of this upper limit is a matter of routine experimentation for the skilled person who is aware of the needed balance between the surface roughness and the electromagnetic characteristics of the laminated films for their use as magnetic recording media (see also page 2, lines 27 to 32 of the patent in suit). As a consequence, this feature need not be taken into consideration for the assessment of inventive step.

3.6.3 As a corollary of the above, the Board concludes that the subject-matter of Claim 1 lacks an inventive step with regard to the teaching of D5 in combination in general common knowledge (Article 56 EPC).

4. *Admissibility of document "SE-30C"*

As was established at the oral proceedings, the Respondent has not provided any translation into one of the official languages of this document, which is entirely written in Japanese. The Respondent therefore could not expect the Appellant and the Board to understand its content. Since it was presented for the first time at the oral proceedings and the Board could not verify its relevance, this document is disregarded under the provisions of Article 114(2) EPC.

Order

For these reasons it is decided that:

1. Document "SE-30C" is not admitted.
2. The appeal is dismissed.

The Registrar:

The President:

G. Röhn

P. Kitzmantel