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**Datasheet for the decision
of 25 February 2010**

Case Number: T 1264/08 - 3.2.05

Application Number: 98957128.6

Publication Number: 0962332

IPC: B41M 5/40

Language of the proceedings: EN

Title of invention:

Biaxially oriented polyester film for thermal transfer

Patentees:

Mitsubishi Polyester Film Corporation, et al

Opponent:

Toray Industries, Inc.

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56, 83

Relevant legal provisions (EPC 1973):

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Keyword:

"Novelty (main request, no)"

"Sufficiency (first auxiliary request, yes)"

"Inventive step (first auxiliary request, yes)"

Decisions cited:

-

Catchword:

-



Case Number: T 1264/08 - 3.2.05

DECISION
of the Technical Board of Appeal 3.2.05
of 25 February 2010

Appellant: Toray Industries, Inc.
(Opponent) 2-1 Nihonbashi Muromachi 2-chome
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Respondents: Mitsubishi Polyester Film Corporation
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
2 May 2008 concerning maintenance of European
patent No. 0962332 in amended form.

Composition of the Board:

Chairman: W. Zellhuber
Members: P. Michel
C. Rennie-Smith

Summary of Facts and Submissions

- I. The appellant (opponent) lodged an appeal against the interlocutory decision of the Opposition Division maintaining European patent No. 0 962 332 in amended form.
- II. Oral Proceedings were held before the Board of Appeal on 25 February 2010.

The appellant requested that the decision under appeal be set aside and that the European patent No. 0 962 332 be revoked.

The respondents (patent proprietors) requested as main request that the appeal be dismissed or that the decision under appeal be set aside and the patent be maintained on the basis of auxiliary request I filed on 26 January 2009 or of auxiliary request II filed on 27 January 2009. The respondents further requested that the documents filed during the appeal procedure be not admitted into the proceedings.

- III. Claim 1 as maintained by the opposition division (main request) reads as follows:

"1. A biaxially oriented polyester film, which is biaxially stretched and oriented in a machine direction and a transverse direction of the film, for thermal transfer printing, which is obtained by applying a coating liquid containing a water-soluble or water-dispersible organic polymer to at least one surface of a polyester film prior to the completion of crystallization by orientation, drying said coating

liquid, stretching said film and thermally treating said film, and which has a thickness of 20 μm or less, **characterized by** a thickness fluctuation, which is a value obtained by dividing a difference between the maximum thickness and the minimum thickness by an average thickness of the film, in any 15 meter interval in the machine direction of the coated film being 7% or less and an average surface roughness of the uncoated film being from 0.03 to 0.2 μm ."

Claim 1 of the first auxiliary request reads as follows:

"1. A process for preparing a biaxially oriented polyester film, which is biaxially stretched and oriented in a machine direction and a transverse direction of the film, for thermal transfer printing, comprising applying a coating liquid containing a water-soluble or water-dispersible organic polymer to one surface of a polyester film prior to the completion of crystallization by orientation, drying said coating liquid, stretching said film and thermally treating said film, and which has a thickness of 20 μm or less, characterized by allowing one or more driving or free rolls in contact with the opposite surface of the film to the coated surface in a drying section, which process provides for a thickness fluctuation, which is a value obtained by dividing a difference between the maximum thickness and the minimum thickness by an average thickness of the film, in any 15 meter interval in the machine direction of the coated film being 7% or less and an average surface roughness of the uncoated film being from 0.03 to 0.2 μm ."

IV. The following documents are referred to in the present decision:

- D1: EP-A-0 453 579
- D10: JP-A-9-175046
- D10a: Partial English translation of document D10
- D10b: English translation of document D10
- D11: JP-A-9-206654
- D11a: English translation of document D11
- D12: Experimental Report, Toray Plastics (America), Inc., 8-9 September 2008
- D12a: Experimental Report, Toray Plastics (America), Inc., 3-4 June 2009
- D13: "Plastic films - manufacturing and application", 2nd edition, pages 158, 365 to 375
- D13a: Partial English translation of document D13
- D14: US-A-4,778,694
- D15: JP-A-63-283783
- D15a: English translation of document D15
- D16: Encyclopedia of Polymer Science and Engineering, John Wiley and Sons, Inc., 2nd edition, 1988, vol. 12, pages 193 to 216

V. The arguments of the appellant in the written and oral proceedings can be summarised as follows:

Documents D10, D10a, D11 and D11a were filed together with the grounds of appeal in response to the decision of the opposition division. In particular, it was considered necessary to demonstrate that the prior art disclosed or rendered obvious the restricted range for thickness fluctuation specified in claim 1 as maintained by the opposition division. The experimental report of document D12 was filed as soon as possible

thereafter. Documents D14, D15 and D15a were filed in response to the filing of the first auxiliary request.

These documents are prima facie highly relevant and should therefore be admitted into the proceedings.

Claim 1 according to all requests of the respondent contains the feature that average surface roughness of the *uncoated* film is from 0.03 to 0.2 μm . Claim 1 as granted refers, however, to the coated film. The amendments thus do not comply with the requirement of Article 123(3) EPC.

In Example 4 of the patent in suit, the same measures for suppressing thickness fluctuation were applied as in Example 3. However, a thickness fluctuation greater than 7% was obtained. The difference in the draw ratios between the two Examples cannot substantially influence the thickness fluctuation. Rather, it is the temperature and temperature variation in the preheating zone which plays an essential role in suppressing thickness fluctuation (see Annex 1 of the submission of 25 January 2010). The patent in suit thus does not provide a sufficient teaching of the process parameters necessary to achieve a thickness fluctuation of less than 7%.

Further, there is no indication as to the amount and particle size of the organic or inorganic particles which are necessary to achieve the specified average surface roughness of the uncoated film of from 0.03 to 0.2 μm .

Still further, there is insufficient disclosure of the temperature for the drying step.

The requirements of Article 83 EPC are therefore not satisfied.

As confirmed by the experimental report of document D12, a biaxially stretched polyester film produced in accordance with the process of Example 1 of document D10 satisfies all the requirements of claim 1 of the main request. Counter-measures to suppress vibration of the patent in suit were not applied when carrying out the process and are, in any case, irrelevant for obtaining the specified thickness fluctuation.

The subject-matter of claim 1 of the main request thus lacks novelty.

Claim 1 of the first auxiliary request is unclear in view of the term "drying section". There is no indication as to where the drying section starts and ends.

Document D10 is regarded as being the closest prior art with respect to claim 1 of the first auxiliary request. The subject-matter of claim 1 is distinguished from the disclosure of this document only by the provision of one or more driving or free rolls in contact with the opposite surface of the film to the coated surface in a drying section.

Document D14 discloses a method and device for applying liquid to a web using a web vibration absorber in the

form of a roller, drum or the like in contact with the web (column 1, lines 12 and 46 to 51).

Document D15a also discloses a method for obtaining a uniform coating thickness of a coating agent in which a guide roll supports a plastic film after coating (Figure 3 and page 3, 2nd paragraph).

The subject-matter of claim 1 of the first auxiliary request thus does not involve an inventive step.

VI. The arguments of the respondents in the written and oral proceedings can be summarised as follows:

Documents D10, D10a, D11, D11a and D12 were late filed. There is no reason why these documents could not have been filed earlier. Whilst it is suggested by the appellant that documents D14, D15 and D15a were filed in response to the filing of the auxiliary requests, the documents were only filed one year after the filing of the auxiliary requests.

These documents should therefore not be admitted into the procedure.

Claim 1 according to all requests, as well as claim 1 as granted, refer to the average surface roughness of the uncoated film. The amendments thus comply with the requirement of Article 123(3) EPC.

The patent in suit, referring to the Examples in particular, contains sufficient information to enable the person skilled in the art to produce a biaxially oriented polyester film as specified in claim 1 of the

main request and to carry out the process of claim 1 of the auxiliary requests.

The difference in the draw ratio between Examples 3 and 4 accounts for the difference in thickness variation. The skilled person is capable of adjusting the surface roughness as known, for example, from document D1. The drying process is not critical.

The requirements of Article 83 EPC are therefore satisfied.

Document D10 is silent as to the thickness variation and the surface roughness. In particular, document D10 does not teach any means for suppressing vibration of the film. The values obtained by the appellant can only be obtained by suppressing vibration of the film in accordance with the teaching of the patent in suit.

The subject-matter of claim 1 of the main request is thus new.

The term "drying section" as used in claim 1 of the first auxiliary request may be broad in scope, but is clear.

As regards claim 1 of the first auxiliary request, document D10 constitutes the closest prior art.

The prior art as represented by documents D14 and D15 does not contain any hint to provide the rolls as specified in claim 1 in the process known from document D10. Document D15 is concerned with obtaining a uniform

coating thickness and is not concerned with the film thickness.

The subject-matter of claim 1 thus involves an inventive step.

Reasons for the Decision

1. *Late filed documents*

Documents D10, D10a, D11 and D11a were filed with the grounds of appeal. In the decision under appeal, the patent in suit was maintained in amended form, the opposition division rejecting the objection of the appellant of a lack of inventive step of claim 1 based on a combination of documents D1 and D5. The filing of these documents is thus regarded as being in response to the decision under appeal. As discussed below, document D10 in particular is relevant to the validity of the claims of all requests of the respondent.

Document D12, although mentioned in the grounds of appeal, was only filed two months later. It can, however, be accepted that this delay was necessary for the preparation of this technical report, as well as for its translation into English. It is further noted that the respondent had sufficient time to react to this document over the course of the present proceedings by means of argumentation and the carrying out of any appropriate tests.

Documents D10b, D12a, D13, D13a, D14, D15, D15a and D16 were filed one month before the oral proceedings.

Document D10b represents a complete translation of document D10 as opposed to the partial translation (document D10a) previously filed. Document D16 is an extract from a well known encyclopedia representing the general technical knowledge of the person skilled in the art. Documents D14, D15 and D15a are prior art documents which are considered to be prima facie relevant to the subject-matter of auxiliary requests filed by the respondent during the course of the present proceedings. Whilst it would have been possible to have filed these documents at an earlier date, it is considered that they are nevertheless prima facie sufficiently relevant to require their admission.

On the other hand, document D12a is a technical report repeating tests carried out in document D12. In view of the limited time available to the respondent to react to this document, it is not considered appropriate to admit this document into the proceedings.

Documents D13 and D13a are not considered to be sufficiently relevant to require their admission.

Documents D10b, D14, D15, D15a and D16 are accordingly admitted into the proceedings.

Main request

2. *Novelty*

Example 1 of document D10 relates to a method of producing a biaxially oriented polyester film, which is biaxially stretched and oriented in a machine direction

and a transverse direction of the film, for thermal transfer printing, including the steps of applying a coating liquid containing a water-based organic polymer to a surface of a polyester film prior to the completion of crystallization by orientation, drying the coating liquid, stretching and thermally treating the film.

Document D12 is an experimental report which describes the carrying out of a process for the preparation of a film in accordance with the instructions of Example 1 of document D10. As confirmed by the appellant during oral proceedings, countermeasures to suppress vibration of the film carrying the applied coating liquid as proposed in the patent in suit were not used. As stated in Table 1 of document D12, the coated film has a thickness of 6.15 μm and a thickness fluctuation of 4.9%. The uncoated film has an average surface roughness of 0.04 μm .

Thus, carrying out Example 1 of document D10 results in a film having the parameters specified in claim 1. The subject-matter of claim 1 is thus not new.

First auxiliary request

3. *Sufficiency of disclosure (Article 83 EPC)*

It is alleged on behalf of the appellant that the disclosure of the patent in suit is insufficient to enable the person skilled in the art to obtain a biaxially oriented polyester film having a thickness fluctuation and surface roughness as specified in

claim 1. In addition, there is alleged to be insufficient disclosure of the drying temperature.

3.1 Thickness fluctuation

It is pointed out on behalf of the appellant that, whilst the film of Example 4 (deleted) of the patent in suit does not have a thickness fluctuation in the machine direction satisfying the criterion of claim 1, that of Example 3 does.

It appears that this difference is explained by the use of a different draw ratio when stretching in the machine and transverse directions. It has not been established that the draw ratio does not play a role in thickness fluctuation.

3.2 Surface roughness

It appears that the person skilled in the art is aware that the surface roughness can be varied by varying the amount of inactive particles and varying the particle size (see, for example, document D1, page 5, lines 18 to 35). There is nothing to indicate that the person skilled in the art would be incapable of specifying a suitable amount of particles of a suitable particle size without undue burden. In addition, the examples of the patent in suit provide guidance in this direction.

3.3 Drying temperature

It is suggested by the appellant that a drying temperature "extremely lower or higher than the temperature given in document D1" would be undesirable.

There is not, however, any reason for the use of such extreme temperatures. There is no evidence to suggest that the person skilled in the art would not be able to apply a suitable drying temperature without undue burden.

- 3.4 The person skilled in the art is thus capable of producing a biaxially oriented polyester film having a thickness fluctuation and an average surface roughness as specified in claim 1 in the light of the teaching of the patent in suit without undue burden. The requirements of Article 83 EPC are therefore satisfied.

4. *Clarity*

Claim 1 specifies that, after coating of the polyester film with a coating liquid, the coating liquid is dried, whereafter the film is stretched and thermally treated. The term "drying section" as used in claim 1 is therefore construed as referring to the section of the production line between the coating station and the preheating zone, in which the drying of the coating liquid takes place. An illustration of such a process is available in Figure 7 of document D16, which demonstrates the general knowledge of the person skilled in the art.

5. *Inventive step*

5.1 Closest prior art

Example 1 of document D10 is regarded as constituting the closest prior art and discloses a process for preparing a biaxially oriented polyester film having

all the features of claim 1 according to the main request, as set out under point 2 above.

The subject-matter of claim 1 is thus distinguished over the disclosure of document D10 in that one or more driving or free rolls are in contact with the surface of the film opposite to the coated surface in a drying section.

According to paragraphs [0014] and [0015] of the patent in suit, the object of the invention is to provide a film which, when used as a thermal transfer ink ribbon, results in an improvement in the evenness of printing density and colour reproducibility. These effects result from restricting the thickness fluctuation of the film. However, as discussed under point 2 above, the process of Example 1 of document D10 achieves a thickness fluctuation within the range specified in claim 1 as a result of temperature control in three zones of a preheating zone before transverse stretching of the film takes place (see document D10b, paragraph [0083]).

According to the patent in suit, restriction of the thickness fluctuation of the film is achieved by applying measures which reduce vibration of the film (see paragraphs [0041] to [0046]), whereby the temperature distribution in the film becomes more even during drying, preheating and stretching. The distinguishing feature of claim 1, that is, the provision of one or more driving or free rolls in contact with the opposite surface of the film to the coated surface in a drying section, is one of these measures (see paragraph [0044]).

5.2 Problem to be solved

Thus, the problem to be solved is regarded as being to provide an alternative to temperature control in three zones of a preheating zone for achieving restriction of the thickness fluctuation of the film.

5.3 Solution

As illustrated in Figure 1, document D14 relates to an apparatus for applying a coating liquid to both sides of a web 1 by means of liquid feeders 2,3. The web is subsequently dried by an air dryer 4. In order to damp vibrations induced by the dryer, air is blown uniformly on both sides of the web in a vibration damper 6 arranged between the second liquid feeder and the dryer. There is thus no suggestion of providing rolls in contact with the opposite surface of the film to the coated surface in a drying section.

Document D15 discloses a method of coating a plastic film, in which, immediately after coating, the film passes over a flat guide roll, guider means 18a, 18b being provided to prevent wrinkles or slack developing in the film and to hold the film in a horizontal state. Thus, the tendency for the coating liquid to flow on the surface of the film before drying, owing to the film not being horizontal, is reduced and a uniform coating thickness is obtained (see page 8, line 15 to page 9, line 5). There is, however, no suggestion in document D15 that such an arrangement could contribute to maintaining an even temperature distribution in the film and thereby contribute to a uniform film thickness.

The prior art thus does not suggest a modification of the process known from document D10 by the provision of one or more driving or free rolls in contact with the surface of the film opposite to the coated surface in a drying section.

The subject-matter of claim 1 thus involves an inventive step. Claims 2 to 9 are dependent from claim 1 and relate to preferred aspects of the process of claim 1. The subject-matter of these claims thus also involves an inventive step.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent on the basis of claims 1 to 9 of auxiliary request I filed on 26 January 2009 and the description to be adapted thereto.

The Registrar:

The Chairman:

D. Meyfarth

W. Zellhuber