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Datasheet for the decision of 16 October 2008

Case Number: T 1791/06 - 3.2.05

Application Number: 98957139.3

Publication Number: 0982115

IPC: B29C 55/12

Language of the proceedings: EN

Title of invention:
Biaxially oriented polyester film for magnetic recording media

Patentee:
TEIJIN LIMITED

Opponent:
Toray Industries, Inc.

Headword:
-

Relevant legal provisions:
EPC Art. 56

Relevant legal provisions (EPC 1973):
-

Keyword:
"Inventive step (main request & second auxiliary request, no)"
"Admissibility (first auxiliary request, no)"

Decisions cited:
-

Catchword:
G 0002/88

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1791/06 **-** 3.2.05

D E C I S I O N
of the Technical Board of Appeal 3.2.05
of 16 October 2008

Appellant: (Opponent)
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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 13 November 2006 concerning maintenance of European patent No. 0982115 in amended form.

Composition of the Board:

Chairman: W. Zellhuber
Members: P. Michel
E. Lachacinski

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the interlocutory decision of the Opposition Division maintaining European patent No. 0 982 115 in amended form in accordance with the main request of the patentee.

II. Oral Proceedings were held before the Board of Appeal on 16 October 2008.

The appellant (opponent) requested that the decision under appeal be set aside and that the European patent no. 0 982 115 be revoked in its entirety; furthermore that the auxiliary request X of the respondent be not admitted into the proceedings.

The respondent (patentee) requested that the appeal be dismissed or, as an auxiliary measure, that the decision under appeal be set aside and that the patent in suit be maintained on the basis of the following documents:

- auxiliary request 1: set of claims submitted as auxiliary request X on 16 September 2008, or

- auxiliary request 2: set of claims submitted as auxiliary request IV on 1 April 2008.

The remaining requests of the respondent were withdrawn at the oral proceedings.

III. Claim 1 according to the main request reads as follows:

"1. A biaxially oriented polyester film for magnetic recording medium **characterized in that** the thickness of the film is thinner than 7μm, that the surface roughness WRa of the film surface to be covered with the magnetic layer is from 2.0 to 6.0nm and that the shrinkage P (ppm/g) of the film in transversal direction under a load (g) applied in machine direction of the film is 3 to 10 ppm/g and satisfies the following formula

$$1 \leq P - \frac{(\alpha t + \alpha h)}{10} \leq 10$$

wherein $\alpha t (x10^{-6}/^{\circ}C)$ is the thermal expansion coefficient of the film in transversal direction and $\alpha h (x10^{-6}/\%RH)$ is the humidity expansion coefficient of the film in transversal direction."

Claim 1 according to the first auxiliary request differs from claim 1 of the main request in that the term "A biaxially oriented polyester film for magnetic recording medium" is replaced by "Use of a biaxially oriented polyester film for the purpose of reducing error rate caused by track shift in linear-track digital data storage magnetic recording medium".

Claim 1 according to the second auxiliary request differs from claim 1 of the main request in that the features "that the Young's modulus in the machine direction is 700 to 900 Kg/mm^2, that the ratio of Young's modulus in the machine direction of the film E_M to the Young's modulus in the transversal direction E_T (E_M/E_T) is between 2.0 and 0.9" are introduced after "the surface roughness WRa of the film surface to be covered with the magnetic layer is from 2.0 to 6.0nm".

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

D1: JP-A-9-143352, together with a translation thereof
D2: JP-A-9-11429, together with a translation thereof
D3: Experimental Report
D5: "Friction abrasion in the Magnetic Tape and Head Running System; Source of Trouble and Measures against it" Engineering Information Center Publication Section, together with a partial translation thereof, published on 31 January 1987
D6: JP-A-9-277472, together with a translation thereof

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

As regards claim 1 of the main request, the closest prior art is Examples 1 and 4 of document D2. Claim 1 is distinguished over the disclosure of this document only by the specified value of surface roughness.

The problem as stated in the patent in suit, that is, to reduce error rate caused by track shift, is solved by the film of document D2, since it has a transverse shrinkage as specified in claim 1. The effect of increasing surface roughness is, as stated in paragraph [0022] of the patent in suit, to worsen the output characteristics, whilst the effect of reducing surface roughness is to worsen the slipperiness and hence windability of the film. These effects are not related to any other problems, as demonstrated in Table 1 of the patent in suit, where electromagnetic conversion characteristics follow surface roughness.

As indicated in documents D5 (page 13) and D6 (paragraph[0005]), these effects are well known and the person skilled in the art would be led to use a surface roughness in the range specified in claim 1.

Whilst an excessive surface roughness may result in track error, this only applies at values beyond those under consideration in the present case. This may be seen from a comparison of Examples 1 and 2 and Comparison Examples 1 and 2 in Table 1 of the patent in suit, which show higher roughness resulting in lower error rates.

Document D2 gives values of surface roughness in terms of Ra, not WRa; WRa values being somewhat lower. In addition, whilst the document states that the specified values of Ra lead to good winding shape and shaving resistance, the person skilled in that art would consider a compromise in these qualities in return for a better output. The teaching of document D2 would thus not deter the person skilled in the art from working in the range of surface roughness specified in claim 1.

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

The first auxiliary request was late filed. In addition, the amendment to claim 1 does not conform with decision G 2/88, since the use of the film and the purpose for which it is used are still the same as in the prior art.

The first auxiliary request should therefore not be admitted into the proceedings.

The patent in suit does not demonstrate or mention any effects associated with the features introduced into claim 1 of the second auxiliary request. The problem to be solved can thus be regarded as being merely to provide an alternative to the film of document D2.

Documents D1 and D6 indicate that the values of Young's modulus and the ratio of Young's modulus in the machine direction to that in the transverse direction as specified in claim 1 are generally used in the art.

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

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

Document D2 is regarded as being the closest prior art.

The invention of the patent in suit relates to the field of thin films and is concerned with the problem of reducing error rate caused by track shift.

The approach of the appellant, in which the problems of track shift on one hand, and windability and output characteristics on the other are separated, is incorrect. In particular, increased surface roughness causes meandering of the tape and therefore track shift. It is the totality of the specified values of surface roughness and dimensional stability which is responsible for reduced track shift. The objective problem must therefore be to provide a film suitable for reducing error rate caused by track shift in a

linear-track digital data storage magnetic recording medium.

Document D2 provides a clear teaching in paragraph [0012] that the surface roughness must be at least 10 nm, and preferably at least 17 nm. In addition, document D2 has no reference to the problem of track shift. None of the remaining cited documents mentions track shift or suggests a solution to the stated problem. There is thus no motivation for the person skilled in the art to reduce the surface roughness below the values specified in document D2.

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

Claim 1 of the first auxiliary request is drafted in accordance with the decision G 2/88. Whilst this decision concerns the use of known articles in view of newly discovered properties, the present case relates to a film which is already distinguished from the disclosure of document D2 by virtue of the recited surface roughness. In addition, the claim is distinguished from the known film by being used for the purpose recited in the claim.

The specified use is a limiting technical feature which is not suggested anywhere in the prior art.

The amendment to claim 1 thus serves to further distinguish the claim from the prior art, so that the request should be admitted into the procedure.

There is no motivation in the prior art to adopt the parameters specified in claim 1 of the second auxiliary request. These result in the shrinkage remaining within the preferred range, whilst the rigidity of the film maintains a stable contact with the recording head.

The subject-matter of claim 1 of the second auxiliary request thus involves an inventive step.

Reasons for the Decision

1. *Main Request*

1.1 Inventive Step

1.1.1 Closest Prior Art

The closest prior art is represented by the biaxially oriented polyester film for magnetic recording medium disclosed in document D2, and, in particular, that of Examples 1 and 4. As set out in Tables 3 and 4 of the notice of opposition, document D2 discloses, with particular reference to Examples 1 and 4, a polyester film having all the features of claim 1, apart from the feature that the surface roughness (WRa) of the film surface to be covered with the magnetic layer is from 2.0 to 6.0nm. The films of Examples 1 and 4 have a surface roughness (WRa) of 13 and 15 respectively. The subject matter of claim 1 thus differs from the disclosure of document D2 in that the surface roughness of the film is decreased to the specified value.

1.1.2 Problem

As indicated in paragraph [0022] of the patent in suit, a surface roughness (WRa) of greater than 6.0nm has a deleterious effect on output characteristics of a magnetic recording medium using the film, whilst a surface roughness (WRa) of less than 2.0nm has a deleterious effect on windability of the film due to insufficient slipperiness. The problem to be solved starting from document D2 can therefore be regarded as being to provide a polyester film which, when used in a magnetic recording medium, results in an improvement in output characteristics.

It is not accepted that this problem cannot be separated from that of reduction of error rate due to track shift. This problem arises from shrinkage of the film in the transverse direction and is solved, according to the patent in suit (see paragraphs [0007] to [0009]) by ensuring that the shrinkage has a value as specified by the formula recited in claim 1. However, since the film of document D2 satisfies this criterion, it must be concluded that the known film also solves the problem of track shift when used in a magnetic recording medium.

Whilst it was alleged on behalf of the respondent that a high surface roughness gives rise to a meandering movement of the tape which causes track shift, there is nothing to indicate that this effect occurs with the amounts of surface roughness with which the cited prior art and the present invention are concerned. Thus, for example, Examples 5 to 7 of the patent in suit, as set out in Table 2, indicate that a decrease in surface

roughness leads to an increase in the electromagnetic conversion characteristics, but does not have any effect on error rate.

1.1.3 Solution

Document D6 is also concerned with biaxially oriented polyester films for magnetic recording media, as indicated in paragraph [0001] at page 4. The document recognizes in the passage at page 4, line 27 to page 5, line 19 that the choice of a suitable surface roughness involves a compromise between slipperiness and electromagnetic conversion characteristics. As disclosed at page 8, lines 21 to 27, WRa^B, that is, the surface roughness of the film surface (B) to be covered with the magnetic layer, is preferably 0.5 to 5 nm, more preferably 1.5 to 5 nm.

The person skilled in that art, seeking to improve the output characteristics of the magnetic recording medium disclosed in document D2 would thus use a polyester film having a surface roughness (WRa) of the film surface to be covered with the magnetic layer within the range of 2.0 to 6.0 nm.

It is noted that document D2 states in paragraph [0012] on pages 10 and 11, that the average surface roughness (Ra) must be at least 10 nm. As also stated in this paragraph, this is in order to obtain a desired winding shape and shaving resistance. It is not accepted that this disclosure would deter the person skilled in the art from departing from the teaching of document D2 in this respect. Thus, it may be desired to obtain improved output characteristics, even if this means

accepting somewhat inferior winding shape and shaving resistance characteristics.

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

2. *First Auxiliary Request*

2.1 Admissibility

The claims of the first auxiliary request were filed 16 September 2008, that is, one month before the date on which oral proceedings before the Board were held. The question of admissibility of the request thus depends upon the question of whether or not the amendments involved could potentially overcome the objection raised against the main request of a lack of inventive step.

As compared with claim 1 of the main request, claim 1 is directed to the use of the polyester film "for the purpose of reducing error rate caused by track shift in linear-track digital data storage magnetic recording medium". The claim is thus effectively directed to a method of manufacturing a magnetic recording medium using the polyester film. The claim does not, however, indicate any features of the method of manufacture which would enable the claim to be distinguished from the method of manufacture by coating a surface of the film by a magnetic layer as disclosed in document D2. In addition, the purpose of the use remains the same, that is, to manufacture a magnetic recording medium. There is thus no new use in the sense of a use of the film for a new purpose. The sole difference between the

subject-matter of claim 1 and the disclosure of document D2 thus remains the surface roughness of the film.

The situation in the present case thus does not correspond to that considered in decision G 2/88, in which a claim is directed to a new use of a known compound, the new use being based on a previously unknown technical effect.

In addition, the reference to "reducing error rate" is unclear, since it is nowhere specified with respect to what the error rate is reduced.

The amendment is thus not regarded as potentially overcoming the objection to claim 1 of the main request of a lack of inventive step. The first auxiliary request is thus not admitted into the proceedings.

3. *Second Auxiliary Request*

3.1 Inventive step

Document D2 is also regarded as representing the closest prior art. In addition to the difference in surface roughness, the subject-matter of the claim is distinguished over the disclosure of this document in that the Young's modulus in the machine direction is 700 to 900 Kg/mm^2, and that the ratio of Young's modulus in the machine direction of the film E_M to the Young's modulus in the transverse direction E_T (E_M/E_T) is between 2.0 and 0.9.

There is, however, no evidence that the choice of Young's moduli in these ranges has any technical effect. The problem to be solved can accordingly be regarded as being, in addition to that of improving output characteristics of a recording medium comprising the film, to provide an alternative film.

The values of Young's modulus specified in the claim are not unusual in the art. Thus, for example, the polyester film of Example 1 of document D1, as shown in the reproductions of this example carried out by both parties (see document D3, prepared by the respondent, and Tables 1 and 2 of the notice of opposition of the appellant), has Young's moduli in the machine and transverse directions of 735 and 450 kg/mm^2, respectively, resulting in a ratio of 1.63. In Example 3, the Young's moduli in the machine and transverse directions are 800 and 700 kg/mm^2, resulting in a ratio of 1.14. Similarly, in document D6, at page 13, lines 7 to 9, it is stated that it is preferable that the Young's modulus in the machine direction is 400 to 900 kg/mm^2 and that in the transverse direction is 550 to 1500 kg/mm^2.

Accordingly, the person skilled in the art would regard the values specified in claim 1 as being those generally used for a polyester film intended to be used for a magnetic recording medium and would regard the adoption of these values as a routine alternative to the values disclosed in document D2 (Table 3).

The subject-matter of claim 1 thus does not involve an inventive step.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent in revoked.

The Registrar: The Chairman:

D. Meyfarth W. Zellhuber