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D E C I S I O N
of 3 April 2001

Case Number: T 0498/98 - 3.3.3

Application Number: 92307194.8

Publication Number: 0532172

IPC: C08L 67/02

Language of the proceedings: EN

Title of invention:
Biaxially oriented, unidirectionally long polyethylene-2,6-naphthalate film and magnetic tape therefrom

Applicant:
TEIJIN Limited

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 123(2)

Keyword:
"Novelty (yes)"
"Inventive step (yes)"

Decisions cited:
T 0201/83

Catchword:
-

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Case Number: T 0498/98 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 3 April 2001

Appellant: TEIJIN LIMITED
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Decision under appeal: Decision of the Examining Division of the European Patent Office dated 18 September 1997 and isued in writing on 5 December 1997 refusing European patent application No. 92 307 194.8 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: R. Young
Members: C. Idez
A. Lindqvist

Summary of Facts and Submissions

I. European patent application No. 92 307 194.8, filed on 6 August 1992 in the name of Teijin Limited, claiming the priority of the earlier Japanese patent application JP 226416/91 of 13 August 1991 and published under No. 0 532 172 on 17 March 1993, was refused by a decision of the Examining Division announced orally on 18 September 1997 and issued in writing on 5 December 1997.

II. The decision was based on a set of 5 claims of a main request filed on 18 August 1997, on a set of 5 claims of a first auxiliary request submitted on 18 August 1997 and on Claims 1 to 5 as originally filed as second auxiliary request. Independent Claim 1 of the main request read as follows:

"A biaxially oriented, unidirectionally long polyethylene-2,6-naphthalate film,
(A) which contains solid particles consisting essentially of

(a) 0.05 to 0.4% by weight of first inert solid particles having an average particle diameter of 0.05 to 0.3 μm, and

(b) 0.005 to 0.05 % by weight of second inert solid particles having an average particle diameter of 0.3 to 1.0 μm and being chemically different from said first inert solid particles, this average particle diameter being greater than the average particle diameter of the first inert solid particles by at least 0.3 μm, wherein:

(B) the Young's modulus in the length direction is at least 650 kg/mm², the Young's modulus in the width direction is at least 600 kg/mm², the Young's modulus in the length direction is greater than the Young's modulus in the width direction,

(C) the heat shrinkage factor in the length direction in heat treatment at 70° C for 1 hour under no load is not more than 0.08 %, and

(D) the surface roughness, Ra, is 3 to 10 nm."

Dependent Claims 2 to 4 related to preferred embodiments of the film according to Claim 1 and independent Claim 5 referred to a magnetic tape obtained by forming a magnetic recording layer on one surface of the film according to Claim 1.

The set of Claims 1 to 5 of the first auxiliary request differed from that of the main request solely by the fact that the range of the surface roughness had been limited to 5 to 8 nm in Claim 1 of this request.

Claim 1 of the second auxiliary request read, after correction of a typographical error, as follows:

"A biaxially oriented, unidirectionally long polyethylene-2,6-naphthalate film,
(A) which contains
(a) 0.05 to 0.4% by weight of first inert solid particles having an average particle diameter of 0.05 to 0.3 μm, and
(b) 0.005 to 0.05 % by weight of second inert solid particles having an average particle diameter of 0.3 to 1.0 μm, this average particle diameter being greater than the average particle diameter of the first inert solid particles by at least 0.2 μm,
wherein:

(B) the Young's modulus in the length direction is at least 650 kg/mm², the Young's modulus in the width direction is at least 600 kg/mm², the Young's modulus in the length direction is greater than the Young's modulus in the width direction,

(C) the heat shrinkage factor in the length direction in heat treatment at 70° C for 1 hour under no load is not more than 0.08 %, and

(D) the surface roughness, Ra, is 3 to 10 nm."

Claims 2 to 5 of the second auxiliary request respectively corresponded to Claims 2 to 5 of the main request.

The Examining Division refused the application on the grounds that the subject-matter of Claims 1 to 5 of the main request as well as Claims 1 to 5 of the first auxiliary request lacked inventive step and that the second auxiliary request did not meet the requirements of Articles 54, 56 and 84 EPC. More specifically, the decision held that the subject-matter of Claim 1 of the main request and the first auxiliary request represented a non-inventive selection from the general teaching of D3 (EP-A-0 257 611) and that Example G4 of D3 and Example 7 of D4 (EP-A-0-124 291) anticipated Claim 1 of the second auxiliary request.

III. On 9 February 1998, a Notice of Appeal against the above decision was lodged by the Appellant (Applicant). The prescribed fee was paid on the same date.

With the Statement of Grounds of Appeal, filed on 14 April 1998, the Appellant submitted a new main request as well as two new auxiliary requests each consisting of 3 claims. They differed from the requests before the Examining Division in that the claims of these requests

were all directed to a magnetic tape rather than a biaxially oriented film. Claim 1 of each request was based on a combination of Claims 1, 4 and 5 of the corresponding request before the Examining Division, Claim 1 of the second auxiliary request being further amended by specifying that the average diameter of the second filler was greater than the average diameter of the first inert solid particle by at least 0.25 μm.

IV. With a letter of 2 March 2001, the Appellant filed an experimental report in which a repetition of Example G4 of D3 had been carried out.

V. During the oral proceedings held on 3 April 2001 the Appellant made the second auxiliary request filed on 14 April 1998 his new main request and submitted 3 new auxiliary requests. Claim 1 of the main request reads as follows:

"A magnetic tape obtained by forming a magnetic recording layer on one surface of a biaxially oriented, unidirectionally long polyethylene-2,6-naphthalate film having a thickness of 2 to 12 μm,
(A) which film contains
(a) 0.05 to 0.4% by weight of first inert solid particles having an average particle diameter of 0.05 to 0.3 μm, and
(b) 0.005 to 0.05 % by weight of second inert solid particles having an average particle diameter of 0.3 to 1.0 μm, this average particle diameter being greater than the average particle diameter of the first inert solid particles by at least 0.25 μm, wherein:

(B) the Young's modulus in the length direction is at least 650 kg/mm^2, the Young's modulus in the width direction is at least 600 kg/mm^2, the Young's modulus in the length direction is greater than the Young's modulus in the width direction,

(C) the heat shrinkage factor in the length direction in heat treatment at 70° C for 1 hour under no load is not more than 0.08 %, and

(D) the surface roughness, Ra, is 3 to 10 nm."

Dependent Claims 2 and 3 relate to preferred features of the solid particles contained in the biaxially oriented polyethylene-2,6-naphthalate film. The first auxiliary request differs from the new main request only in that the difference between the average diameter of the first solid particles and the average diameter of the second solid particles has been amended from at least 0.25 μm to at least 0.30 μm. The second and the third auxiliary requests respectively correspond to the main and the first auxiliary requests filed on 14 April 1998.

VI. The arguments presented by the Appellant in the Statement of Grounds of Appeal, in his letter dated 2 March 2001 (submitted in response to a communication of 13 December 2000 annexed to the summons to oral proceedings) and during the oral proceedings held on 3 April 2001 may be summarized as follows:

(i) Claim 1 of the main request met the requirements of Article 123(2) EPC for the following reasons:

(i.1) The specification of the application as filed made clear that the average particle diameter of the second inert solid particles was greater than the average particle diameter of the first inert solid particles by at least 0.2 μm (cf. page 4, lines 26 to 30; original Claim 1).

(i.2) The examples disclosed a range of average particle size differences from 0.25 μm (Example 3) to 0.7 μm (Example 2). Thus amending to lowest average particle size disclosed in the examples did not provide the skilled person with information beyond that present in the application as filed.

(i.3) This difference in size found also its support in the application documents as filed in view of the difference between the lowest values of the average diameters of the second (0.3 μm) and the first (0.05 μm) inert solid particles.

(ii) The subject-matter of Claim 1 of each request was novel, since none of the cited documents disclosed a magnetic tape having as support film a biaxially oriented polyethylene-2,6-naphthalate film (referred as PEN film hereinafter) exhibiting the combination of features (A), (B), (C), and (D) as set out in these claims.

(iii) The Examining Division had used the benefit of hindsight to select from prior art documents the various parameters set forth in the claims.

(iv) The examples of the application in suit showed that the roughness of the film was dependent on the particle size of the fillers and on the draw ratio applied during the manufacture of the film and thatthe shrinkage and the Young's moduli of the film also varied with the draw ratio.

(v) Thus, contrary to the view of the Examining Division, the parameters (B), (C) and (D) were mutually dependent and their combination represented a balance

between these parameters which led to a magnetic tape having excellent electromagnetic characteristics, running durability, skew properties and enabling a long term high density recording.

(vi) The specific combination of inert particles as set out in these claims allowed the manufacture of PEN films exhibiting this combination of dependent parameters. The Appellant had not just set certain limits to independent parameters in an arbitrary manner but had combined mutually dependent parameters. This combination led to improved products and was not obvious from the cited documents.

(vii) The experimental report (submitted with the letter of 2 March 2001) contained a repetition of Example G4 of D3 which showed that the film obtained in this example had a Young's modulus in the transverse direction of the film below the value required in the present application and that the F_5 value in the machine direction was in fact lower than that indicated in D3 for this example.

(viii) The aim of D3 was also to provide polyester films, which could be used as support for magnetic tapes exhibiting good electromagnetic and running properties but, according to D3, the essential technical feature to solve this problem was the use of very specific amorphous spherical silica particles as filler in the polyester film (cf. D3, page 3, lines 45 to 52; page 11, lines 39 to 41). In contrast to this, the application in suit solved this problem in a totally different way by using a specific combination of inert solid particles, which allowed the manufacture of films exhibiting a unique combination of mutually

dependent properties in terms of heat shrinkage, Young's moduli and surface roughness and allowed them to be used as support for magnetic tapes having good electromagnetic and running properties.

VII. The Appellant requested that the decision under appeal be set aside and that the case be remitted to the first instance with the order to grant a patent on the basis of:
Main request: the set of Claims 1 to 3, filed on 14 April 1998 as auxiliary request II,
First auxiliary request: the set of Claims 1 to 3 , filed as first auxiliary request during the oral proceedings,
Second auxiliary request: the set of Claims 1 to 3 filed as main request on 14 April 1998,
Third auxiliary request: the set of Claims 1 to 3 filed as auxiliary request I on 14 April 1998.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. *Amendments*

2.1 Claim 1 of the main request differs from Claim 1 as originally filed by (a) the fact that it is directed to a magnetic tape obtained by forming a magnetic recording layer on one surface of a biaxially oriented long polyethylene-2,6-naphthalate film having a thickness of 2 to 12 μm and by (b) the indication that the average particle diameter of the second inert solid particles is greater than the average particle diameter of the first inert solid particles by at least 0.25 μm.

2.2 Amendment (a) finds adequate support in originally filed Claims 4 and 5 and is therefore allowable under Article 123(2) EPC.

2.3 Concerning amendment (b)

2.3.1 As indicated in the application documents as originally filed (cf. page 4, lines 26 to 30 of the description), the average particle diameter of the second inert solid particles is greater than the average particle diameter of the first inert solid particles by at least 0,2 μm, preferably 0.3 μm.

2.3.2 The only reference in the application documents as filed to a difference between the average diameters of the second and the first solid inert particles of 0.25 μm is to be found in Example 3. In this example 0.015% by weight of particles of calcium carbonate having an average particle diameter of 0.5 μm and 0.3% of a monodisperse silica having an average particle diameter of 0.25 μm are incorporated in the PEN film. The use of this specific filler combination leads to a polyester film having specific roughness (0.008 μm), Young's moduli (800 and 750 kg/mm^2) and heat shrinkage (0.05%).

2.3.3 As stated in the decision T 201/83 (OJ EPO 1984, 481) an amendment of a range in a claim is allowable on the basis of a particular value described in a specific example, provided the skilled person could have readily recognised this value as not so closely associated with the other features of the example to determine the effect of that embodiment of the invention as a whole in an unique manner and to a significant degree.

2.3.4 In the present case the roughness of the film obtained in this example is clearly dependent on the amount, the average diameter and the difference in average

diameters of the solid inert particles. Furthermore, as put forward by the Appellant, the parameters thermal shrinkage, Young's moduli and roughness which are used in combination to characterize the PEN film used in the claimed magnetic tapes are mutually dependent, so that the difference in the average diameters of the solid inert particles disclosed in Example 3 is closely associated with the specific values of these parameters in this example. Thus, the conditions set out in the decision T 201/83 are not met in the present case.

2.3.5 The argument of the Appellant that this difference (i.e. 0.25 μm) in the average diameters of the two kinds of inert solid particles was disclosed in view of the difference between the lower limit of the average diameter range of the second inert solid particles, and the lower limit of the average diameter range of the first inert solid particles is not pertinent, since there is no support in the application as filed for a general rule or principle establishing a constant such difference between the particle diameters of the first and second inert solid particles respectively (cf. section 2.3.1 above). Nor is there any support for a specific combination of first solid inert particles having an average diameter of 0.05 μm and second solid inert particles having an average diameter of 0.3 μm. On the contrary, Example 3 merely refers to first solid particles having an average diameter of 0.25 μm and to second solid particles having an average diameter of 0.5 μm i.e. in both cases well above the lower limits set out for the average diameters of the solid particles.

2.3.6 It follows that the amendment (b) cannot be considered as meeting the requirements of Article 123(2) EPC. Therefore, the main request is not allowable.

First auxiliary request

3. Amendments

3.1 Claim 1 of the first auxiliary request differs from Claim 1 as originally filed by (a) the fact that it is directed to a magnetic tape obtained by forming a magnetic recording layer on one surface of a biaxially oriented long polyethylene-2,6-naphthalate film having a thickness of 2 to 12 μm and (b) the indication that the average particle diameter of the second inert solid particles is greater than the average particle diameter of the first inert solid particles by at least 0.3 μm.

3.2 As indicated above in paragraph 2.1, amendment (a) is fully supported by the application documents as originally filed.

3.3 Amendment (b) finds its support at page 4, lines 26 to 30 of the description as originally filed.

3.4 Claims 2 to 3 of this request are appendant to Claim 1 and further define features which respectively correspond to those in original Claims 2 to 3.

3.5 Thus, the first auxiliary request is allowable under the provisions of Article 123(2) EPC.

4. *Clarity and support*

4.1 In view of the disclosure of the application in suit which gives details as to how to determine the heat shrinkage value, the Young's moduli and the roughness of the films (cf. page 11, line 21 to page 12, line 20), the Board takes the view that these parameters are appropriately defined so that the requirements of Article 84 EPC are considered to be fulfilled. Having regard to the length of the

description of each method used for the determination of these parameters, their inclusion in Claim 1 does not appear appropriate, since this would make this claim unclear through lack of conciseness.

4.2 The fact that the two kinds of solid inert particles might be of the same chemical nature, does not lead to a lack of clarity, since, being characterized by their average particle diameter and difference thereof (i.e. at least 0.3 μm), they will also exhibit two different particle size distributions allowing them to be distinguished from each other.

4.3 Thus, the Board is satisfied that Claims 1 to 3 meet the requirements of Article 84 EPC.

5. *Novelty*

5.1 Documents

The following documents have been considered during the examining procedure:

D1: JP-A-2214736 (in form of the abstract Nr 90-302374 from the WPIL Derwent Database),
D2: JP-A-61179721 (in form of the abstract Nr 86-250145 from the WPIL Derwent Database),
D3: EP-A-0 257 611, and
D4: EP-A-0 124 291.

5.1.1 D1 relates to biaxially oriented polyester (e.g. polyester resins comprising ethylene-2,6-naphthalate units) films containing two kinds of granules in different concentration in different zones, used as base for magnetic tapes. These films contain 0.1 to 2 wt% of granules (A) having an average granular diameter of 5 to 300 nm and 0.005 wt% of granules (B) having an average granular diameter of 300 to 2000 nm, the zones

in vicinity of the granules (B) having a higher concentration of granules (A) than other zones. Alumina and titanium nitrile are preferably used as granules (A) silica and calcium carbonate being preferred as granules (B).

5.1.2 D2 is directed to oriented polyester (e.g. polyalkylene naphthalate) films useful as base for magnetic recording material. These films contain 0.01 to 0.5 wt% of one particle having an average size of 0.01 to 0.2 μm selected from silica and titanium dioxide and 0.01 to 0.3 wt% of calcium carbonate having an average particle size of 0.1 to 0.5 μm.

5.1.3 D3 refers to a polyester composition comprising a polyester and 0.001 to 5% by weight of fine spherical silica particles (A) obtained by subjecting alkoxysilanes to hydrolysis and condensation reaction, said particles being substantially amorphous and having an average diameter D_1 of 0.01 to 3 μm and a diameter dispersion index d_{10}/d_{90} in the range of 1.1 to 2.7. This polyester composition may also comprise in addition to the particles (A) fine particles B-1 in an amount of 0.005 to 1 % by weight, the average diameter D_2 of the particles B-1 being such that D_2/D_1 is in the range from 1.1 to 3, and the weight ratio of B-1 particles to (A) particles being preferably in the range 0.01 to 0.1. Polyethylene-2,6-naphthalate is one of the preferred polyesters used in these compositions. These compositions are used in the manufacture of biaxially oriented films having a thickness of 4 to 30 μm, useful as support for magnetic tapes. The roughness of the films is in the range from 3 nm to 15 nm. In the case of a film made with PEN, the F_5 value (i.e. stress at 5% elongation) in the machine direction is preferably greater than 20 kg/mm^2 and is related to the F_5 value in the transverse direction by the formula $3 > F_{5MD}/F_{5TD} > 1.1$. The heat shrinkage of the films should be low in

order not to deteriorate the skew properties of the magnetic recording medium (cf. D3, Claims 1, 10, 17; page 4, lines 21 to 34; page 6, lines 37 to 41; page 6, line 53 to page 7, line 10; page 9, lines 33 to 50; page 10, lines 36 to 40; page 11, lines 1 to 3). In its Example G4 D3 discloses a PEN film having a thickness of 7 μm, a roughness of 8 nm, exhibiting a F_{5MD} value of 29 kg/mm^2, and containing 0.3 wt% of a spherical silica having an average particle diameter of 0.27 µm but gives no information on the particle diameter dispersion of the spherical silica used, the heat shrinkage and the F_{5TD} of this film.

5.1.4 D4 discloses biaxially oriented aromatic polyester films having a thickness of 3 to 100 μm, exhibiting a surface roughness from 0.001 to 0.016 μm and comprising anatase titanium dioxide particles or a combination thereof with calcium carbonate particles. In the latter case 0.1 to 0,5 % by weight of anatase particles having an average particle diameter in the range of 0.1 to 0.5 μm are combined with 0.1 to 0.3% by weight of calcium carbonate particles of an average particle diameter of 0.3 to 1,5 μm. Preferred polyester resins are polyethylene terephthalate and polyethylene naphthalate. Due to their excellent flatness and slipperiness, these films are suitable as base for magnetic tapes (cf. D4, Claim 1; page 4, line 30 to page 5, line 4; page 8, lines 2 to 3; page 11, lines 6 to 11; page 12, lines 10 to 15; page 13, lines 3 to 12; page 15, lines 20 to 22). In its Example 7 D4 discloses a film based on PEN. This film comprises anatase particles having an average diameter of 0.1 μm in an amount of 0.15% by weight and has a roughness of 7 nm, but there is no mention of the thickness, the heat shrinkage and the Young's moduli of the film.

5.2 Thus, none of the documents D1 to D4 discloses a magnetic tape obtained by forming a magnetic recording layer on one surface of a biaxially oriented unidirectionally long PEN film having a thickness of 2 to 12 μm and exhibiting the combination of the characteristics A(a), (A(b), (B), (C), and (D) as required in Claim 1 of the first auxiliary request. The subject-matter of Claim 1 of this request meets therefore the requirements of Article 54 EPC.

6. *Inventive step*

6.1 The patent application in suit relates to magnetic tapes having as base film a biaxially oriented PEN film.

6.2 Whilst there is a conspicuous absence of any reference to a specifically identified relevant prior art document in the introductory description of the application in suit, such tapes are described in documents D1 to D4.

6.3 The wording of present Claim 1 reveals that the thickness of the PEN film and the features A(a), A(b), B, C, and D are essential in the definition of the biaxially oriented PEN film used as base for the claimed magnetic tapes.

6.4 Example G4 of D3 discloses a PEN film having a thickness of 7 µm and meeting the requirements A(a) and D set out for the biaxially oriented PEN films according to the present application. Furthermore, as shown by the experimental report submitted by the Appellant with his letter of 2 March 2001, the Young's modulus in the length direction of this film is clearly above 650 kg/mm^2 and greater than the Young's modulus in the width direction (i.e. 560 kg/mm^2). Thus, the films used as support for the magnetic tapes according to the

present application are distinguished from the film disclosed in Example G4 of D3 only in that they contain 0.005 to 0.5 by weight of second inert particles having an average particle diameter 0.3 to 1.0 μm, this average particle diameter being greater than the average particle diameter of the first inert solid particles by at least 0.3 μm, by a Young's modulus in the width direction of at least 600 kg/mm^2 and by a heat shrinkage factor in the length direction after heat treatment at 70°C for 1 hour under no load of not more than 0.08%.

Therefore, Example G4 of D3 is considered as the closest prior art.

6.5 Starting from Example G4 of D3 the technical problem underlying the present application may be seen in the provision of further magnetic tapes having biaxially oriented PEN film as support and exhibiting excellent electromagnetic characteristics, running durability, skew properties and enabling a long term high density recording.

6.6 In view of the experimental results in the Examples 1, 2, and 4 the Board considers that the above defined problem is effectively solved by the combination of features according to Claim 1.

7. *Obviousness*

It remains to be decided whether the claimed subject-matter is obvious having regard to the documents on file.

7.1 The aim of D3 is to provide polyester films, which can be used as support for magnetic tapes exhibiting good electromagnetic and running properties. According to D3, and as submitted by the Appellant, the essential

technical feature to solve this problem is related to the use of very specific amorphous spherical silica particles as filler in the polyester film (cf. D3, page 3, lines 45 to 52; page 11, lines 39 to 41).

7.2 D3 also teaches that other types of inactive particles may be combined with the fine spherical silica particles in the polyester compositions used in the manufacture of biaxially oriented polyester films. As indicated in D3 the ratio of the diameter of the second particles (B-1 particles) to the diameter of the spherical silica particles should be in the range 1.1 to 3 and the amount of these second particles should be at least 0.005% by weight and in a ratio from preferably 0.01 to 0.1 in respect of the amount of the silica particles. D3 stresses the influence of this diameter ratio (i.e. a relative value) on the running properties of the tapes but does not teach a minimum absolute value for the difference between the average particle diameters of the two types of solid particles (cf. page 6, line 7 to page 7, line 4).

7.3 D3 does not expressis verbis mention the Young's moduli of the films but discloses the importance of the F_5 values in the machine and transverse directions, these values being related to the Young's moduli of the film (i.e. and as submitted by the Appellant the Young's moduli being generally at least 20 times greater than the respective F_5 values) and being dependent on the stretching conditions applied during the manufacture of the film (cf. page 9, line 36 to page 10, line 19). The F_5 value in the machine direction should be greater than 20 kg/mm^2 and linked to the F_5 value in the transverse direction by the formula $3 > F_{5MD} / F_{5TD} > 1.1$. Nevertheless, even if it could be assumed that such a relationship would also exist between the corresponding

Young's moduli, no indication can be found in D3 as to whether the Young's modulus in the width direction should be at least 600 kg/mm^2 in order to obtain tapes with good running and electromagnetic properties.

7.4 The influence of the heat shrinkage of the films on the skew properties of the magnetic tapes obtained therefrom is also taught in D3 (cf, page 10, lines 37 to 40) but D3 does not mention specific values for this property. D3 also indicates that the roughness of the films should be between 3 and 15 nm in order to obtain good reproduction output as a high density recording medium and that the roughness is dependent on the average diameter of the particles used and the amount thereof and on the stretching conditions applied in the manufacture of the film (cf. page 11, lines 1 to 10).

7.5 Thus, if the skilled person starting from Example G4 of D3 would have followed the teaching of D3, he could have added second particles having an average diameter between 0.297 μm and 0.81 μm in an amount between 0.005% to 0.03 by weight in order to obtain a film having a roughness of up to 15 nm, but he would not have recognized the critical effects of the values of the heat shrinkage (cf. comparative Example 4), of the Young's modulus in the width direction (cf. comparative Example 6) and of the roughness (cf. comparative Example 7) as set out in present Claim 1 on the running and electromagnetic properties of the magnetic tapes obtained therefrom, and the fact that, the roughness, the shrinkage and the Young's moduli of the film being mutually dependent, only a specific combination of inert particles (in particular having a specific difference in average particle diameters) as set out in present Claim 1 could allow the manufacture of films exhibiting this critical and unique combination of properties.

7.6 Thus, D3 itself will not lead to magnetic tapes having as support a biaxially oriented PEN film exhibiting the combination of features as required in present Claim 1 and cannot render the subject-matter of this claim obvious.

7.7 The same argument is also valid for D4, which relates to biaxially oriented polyester films containing two kinds of inert particles and useful as support for magnetic tapes, but gives no indication in order to use a combination of inert solid particles according to present Claim 1 for obtaining magnetic tapes having as support a PEN film exhibiting the unique and critical combination of heat shrinkage, Young's moduli and roughness as required in this claim.

7.8 D1 and D2 do not contain any information concerning the Young's moduli of the films in both directions, the difference in the average particle diameter between the first and the second solid particles and the heat shrinkage of the film and the influence of these features on the properties of the magnetic tapes obtained therefrom. Thus, D1 and D2 do not add anything to the information already present in D3.

7.9 Consequently, the solution of the technical problem does not arise in an obvious way from the cited prior art. It follows that the subject-matter of Claim 1 meets the requirements of Article 56 EPC.

8. Dependent Claims 2 and 3, which relate to preferred features of the film used as support for the magnetic tape set forth in Claim 1, are supported by the patentability of this claim and are therefore also allowable. Since the first auxiliary request is allowable, there is no need for the Board to consider the second and the third auxiliary requests.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to grant a patent on the basis of Claims 1 to 3 forming the first auxiliary request, filed during oral proceedings, after any necessary consequential amendment of the description.

The Registrar: The Chairman:

E. Görgmaier R. Young