Trial decision

Invalidation No. 2012-800177

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In connection with the following part of the trial decision made on October 3, 2013 for the case of trial regarding the invalidation of Japanese Patent No. 3,593,817, entitled "WHITE POLYESTER FILM" between the above parties:
"Patents regarding the inventions according to Claims 1 to 6 of Patent No. 3,593,817 shall be invalidated.", the Intellectual Property High Court has made a decision to cancel the part of the trial decision (2013 (Gyo-Ke) No. 10303, sentenced on October 23, 2014), and has made the decision final and binding. In response, as a result of further

proceeding, a decision is made as follows:

Conclusion

The correction shall be approved.

The demand for trial of the case was groundless.

The costs in connection with the trial shall be borne by the demandant.

Reason

No. 1 Demandant's demand

Demandant seeks a trial decision to the effect that the patents for the inventions according to Claims 1 to 6 of Patent No. 3,593,817 (the number of claims as of the registration is 6; hereinafter, the patents are sometimes referred to as "the Patent") shall be invalidated, and the costs in connection with the trial shall be borne by the demandee.

No. 2 History of the procedures, etc.

1(1) Demandee is the Patentee of the Patent entitled "White polyester film."

(2) The Patent is related to a patent application that was filed on September 27, 1996, and registered on September 10, 2004.

2(1) On October 26, 2012, Demandant made a demand for the trial seeking for a trial decision to invalidate the patents for the inventions according to Claims 1 to 6. In response, the demandee submitted a written reply on January 29, 2013.

(2) The chief administrative judge notified both parties of matters to be examined in the oral proceeding on March 13, 2013 (Notification of trial examination), and in response, the demandant and the demandee respectively submitted oral proceedings statement briefs on May 2, 2013. Further, the demandant and the demandee respectively submitted written statements on May 13, 2013.

(3) On May 17, 2013, in the presence of the demandant's representative and the demandee's representative, the first oral proceeding was held and the parties were advised of the time being ripe to make a trial decision for the case.

3 The Japan Patent Office made a preliminary notice of trial decision on June 3, 2013 to the effect that "Patents regarding the inventions according to Claims 1 to 6 of Patent No. 3,593,817 shall be invalidated" and its certified copies were served to both parties on June 7.

4(1) The demandant demanded for the correction of the specification of the Patent (hereinafter referred to as "the correction") by submitting a written correction request together with a written statement on August 6, 2013.

(2) The Japan Patent Office made a trial decision on October 3, 2013 to the effect that "The correction shall be affirmed. Patents regarding the inventions according to Claims 1 to 6 of Patent No. 3,593,817 shall be invalidated." (hereinafter, simply referred to as "the first trial decision"), and a certified copy thereof was sent to both parties on October 11.

5 The demandee filed a suit on November 8, 2013 with the IP High Court against the first trial decision (2013 (Gyo-Ke) No. 10303). The court decided on October 23, 2014 that a part of "Patents regarding the inventions according to Claims 1 to 6 of Patent No. 3,593,817 shall be invalidated" in the first trial decision should be canceled, and this decision (hereinafter referred to as "cancellation judgment") has been made final and binding.

6(1) The binding of the above cancellation judgment results in a further proceeding pursuant to the provision of Article 181(2) of the Patent Act.

(2) The written statements were submitted by the demandant on December 12, 2014 and the demandee on January 28, 2015, respectively.

No. 3 Approval or disapproval of the Correction

The object of demand and the content of the correction in the correction of the case are respectively set forth as below, according to the description of the written correction request:

1 Object of the demand

The specification and the claims of Patent No. 3,593,817 (hereinafter collectively referred to as "the patent specification") are requested to be corrected for each group of claims as in the corrected specification and the corrected scope of claims attached to the written correction request (hereinafter collectively referred to as "the corrected specification, etc.").

2 Contents of correction

Correction A

The term "white polyester film" in Claim 1 of the claims is corrected to "biaxially-stretched white polyester film" (Claim 2, Claim 3, Claim 4, Claim 5, and Claim 6 depending on Claim 1 are identically corrected).

Correction B

The term "white polyester film" described in paragraph [0007] of the specification attached to the application is corrected to "biaxially-stretched white polyester film."

3 The judgment by the body about the Correction

(1) Regarding correction A

Correction A is intended to limit "white polyester film" recited in Claim 1 before the correction to "biaxially-stretched white polyester film." Therefore, the Correction A is intended to restrict the scope of the claims as specified in item (i) of the proviso to Article 134bis(1) of the Patent Act.

Further, the patent specification discloses in the paragraph [0034] that "To illustrate a detailed manufacturing method of a film consisting of a polyester composition of the present invention, the polyester composition is dried and then subjected to a melt extrusion to obtain an unstretched sheet, followed by biaxial stretching and heat treatment to form a film." Therefore, the Correction A is made within a scope of the matters described in the patent specification, and it does not substantially expand or change the scope of claims, and thus complies with the provisions of Articles 126(5) and (6) of the Patent Act as applied mutatis mutandis to Article 134bis(9) of the Patent Act.

Further, the matters of correction to correct "white polyester film" of Claim 2, Claim 3, Claim 4, Claim 5, and Claim 6 that depend on Claim 1 to "biaxially-stretched white polyester film" is also intended to restrict the scope of the claims as provided in item (i) of the proviso to Article 134bis(1) of the Patent Act, similar to the matters of correction in the above Claim 1 and falling within the scope of the description of the patent specification. Furthermore, it neither substantially expands nor changes the scope of the claims. Therefore, the correction complies with the provisions of Articles 126(5) and (6) of the Patent Act as applied mutatis mutandis to Article 134bis(9) of the

Patent Act.

(2) Regarding correction B

Correction B is intended to make the description of the Described in the Detailed Description of the Invention consistent with the recitation of the Claims, which becomes necessary in association with correction A. Thus it corresponds to a correction for the purpose of clarification of ambiguous statement as provided in the item (iii) of the proviso to Article 134bis(1) of the Patent Act.

Further, the correction does not correspond to the substantial expansion or change of the scope of the claims and obviously falls within the scope of the matters described in the patent specification. Therefore, the correction with regard to correction B complies with the provisions of Articles 126(5) and (6) of the Patent Act as applied mutatis mutandis to Article 134bis(9) of the Patent Act.

(3) Summary

As discussed in items (1) and (2), the correction by the demand for correction is aimed at the matters listed in item (i) or (iii) of the proviso to Article 134bis(1) of the Patent Act, and complies with the provision of Articles 126(5) and (6) of the Patent Act as applied mutatis mutandis pursuant to Article 134bis(9) of the Patent Act.

Therefore, the correction shall be accepted as in the above conclusion.

No. 4 Summary of each of the Inventions

As in the above No. 3, the correction is approved. Therefore, the invention according to the patent subjected to the determination of the trial decision is the one after the correction. Further, in view of the description of the corrected specification, the gist of the invention is specified by the matters recited in Claims 1 to 6 of the scope of claims as in the following (hereinafter, each invention is referred to as "the corrected invention 1," etc. according to the number of the claim, and in some cases, these inventions are collectively referred to as "the corrected invention"):

"[Claim 1]

A biaxially-stretched white polyester film consisting of a polyester composition comprising 5% by weight or more of an inorganic particle, wherein a concentration of terminal carboxyl group of the polyester composition is 35 equivalent/10^6 g polyester or less, and a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) satisfies the following formula:

$30 \leq Tcc-Tg \leq 60$

[Claim 2]

The biaxially-stretched white polyester film consisting of the polyester composition of Claim 1, wherein the inorganic particle is at least one kind of particle selected from the group consisting of metal carbonates, silicate compounds, barium sulfates, and zinc sulfides.

[Claim 3]

The biaxially-stretched white polyester film consisting of the polyester composition of Claim 1 or 2, wherein the polyester is a copolymeric polyester.

[Claim 4]

The biaxially-stretched white polyester film consisting of the polyester composition of Claim 3, wherein the copolymeric polyester is obtained by polymerizing at least one kind of components selected from the group consisting of aromatic dicarboxylic acid, aliphatic dicarboxylic acid, cycloaliphatic dicarboxylic acid, aliphatic diols, and cycloaliphatic diols.

[Claim 5]

The biaxially-stretched white polyester film consisting of the polyester composition according to any one of Claims 1 to 4, wherein a melting point of the polyester is 240°C or more.

[Claim 6]

The biaxially-stretched white polyester film consisting of the polyester composition according to any one of Claims 1 to 5, wherein the polyester composition contains 50 ppm or more of an elemental phosphorus."

No. 5 Allegations by the parties

1 The demandant's allegation of reasons for invalidation

The corrected invention has reasons for invalidation as in the following (1) to (5). Therefore, the patents with respect to the inventions according to Claims 1 to 6 after the correction correspond to the provision of Article 123(1)(ii) of the Patent Act, and thus should be invalidated (First oral proceeding record and overall purport of allegation).

Further, documentary evidence is offered as means of evidence, and the documents (A1 to A11) are submitted as listed in the following item (6).

(1) Reason for invalidation 1

The corrected inventions 1 to 6 are the inventions described in A-1, and thus

correspond to the provision of Article 29(1)(iii) of the Patent Act, and thus are not patentable (hereinafter referred to as "reasons for invalidation 1-1").

Further, the corrected inventions 1 to 6 are the inventions described in A-5, and thus correspond to the provision of Article 29(1)(iii) of the Patent Act, and thus are not patentable (hereinafter referred to as "reasons for invalidation 1-2").

(2) Reason for invalidation 2

The corrected inventions 1 to 6 were easily conceivable by a person skilled in the art with any of A-1 to A-4 as a main cited reference on the basis of the inventions described in A-1 to A-4 and the inventions described in A-5 to A-7, and thus are not patentable under the provision of Article 29(2) of the Patent Act (hereinafter referred to as "reasons for invalidation 2-1").

Further, the corrected inventions 1 to 6 were easily conceivable by a person skilled in the art with A-7 as a main cited reference on the basis of the invention described in A-7 and the inventions described in A-5, A-6, A-8, and A-9, and thus are not patentable under the provision of Article 29(2) of the Patent Act (hereinafter referred to as "reasons for invalidation 2-2").

In addition, the demandant also argues in a written statement submitted on December 12, 2014 that the corrected invention 1 was easily conceivable by a person skilled in the art only on the basis of the invention described in A-1, and thus it corresponds to the provision of Article 29(2) of the Patent Act. Such argument makes an amendment to the statement of the demand and modifies the gist of the statement of the demand, and thus it does not satisfy the requirement of Article 131bis(2) of the Patent Act. Therefore, the amendment shall not be permitted.

(3) Reason for invalidation 3

The present application has deficiency in the scope of claims, and thus does not satisfy the requirement of Article 36(6)(i) of the Patent Act.

(4) Reason for invalidation 4

The present application has deficiency in the Detailed Description of the Invention, and thus does not satisfy the requirement of Article 36(4) of the Patent Act.

(5) Reason for invalidation 5

The present application has deficiency in the scope of claims, and thus does not satisfy the requirement of Article 36(6)(ii) of the Patent Act.

(6) Evidence

A-1: Japanese Unexamined Patent Application Publication No. H07-331038

A-2: Japanese Unexamined Patent Application Publication No. H07-316404

A-3: Japanese Unexamined Patent Application Publication No. H08-143756

A-4: Japanese Unexamined Patent Application Publication No. S62-207337

A-5: Japanese Unexamined Patent Application Publication No. H06-157877

A-6: Japanese Unexamined Patent Application Publication No. H04-1224

A-7: Japanese Unexamined Patent Application Publication No. H06-210720

A-8: "Handbook of Saturated Polyester Resin", edited by Kazuo Yuki, First edition, NIKKAN KOGYO SHIMBUN, LTD., December 22, 1989, pages 676 to 677

A-9: Japanese Unexamined Patent Application Publication No. H08-245771

A-10: Certificate of experimental results prepared on October 24, 2012 by Kameoka Akira of TEIJIN LIMITED, Technical Development Department for Raw Materials and Polymerization, Polymerization Technique Development Division

A-11: Certificate of experimental results (Part 2) prepared on April 23, 2013 by Kameoka Akira of TEIJIN LIMITED, Technical Development Department for Raw Materials and Polymerization, Polymerization Technique Development Division

2 The demandee's allegation

(1) Object of the reply and outline of argument

The demandee seeks for a trial decision to the effect that the demand for trial regarding the invalidation is groundless, and the costs in connection with the trial shall be borne by the demandant. None of the demandant's allegation of reasons for invalidation 1 to 5 has a point.

Further, documentary evidence is offered as means of evidence, and documents (B-1 to B-9) are submitted as in the following (2).

(2) Evidence

B-1: Japanese Unexamined Patent Application Publication No. H09-165501

B-2: Japanese Unexamined Patent Application Publication No. H09-52335

B-3: Japanese Unexamined Patent Application Publication No. H09-85918

B-4: Certificate of experimental results prepared on May 9, 2013 by the Chief Research Officer, Masatoshi Aoyama, of TORAY INDUSTRIES, INC., Film Laboratory

B-5: Certificate of experimental results prepared on August 2, 2013 by the Chief Research Officer, Masatoshi Aoyama, of TORAY INDUSTRIES, INC., Film Laboratory

B-6: Japanese Unexamined Patent Application Publication No. 2010-254779

B-7: Japanese Unexamined Patent Application Publication No. S62-235353

B-8: Certificate of experimental results prepared on July 31, 2013 by a research fellow, Takuji Higashioji, of TORAY INDUSTRIES, INC., Film Laboratory

B-9: Certificate of experimental results prepared on August 2, 2013 by the Chief Research Officer, Masatoshi Aoyama, of TORAY INDUSTRIES, INC., Film Laboratory

No. 6 Judgment

It is the collegial body's position that none of the arguments about the invalidation (reasons for invalidation 1-1, 1-2, 2-1, 2-2, 3, 4 and 5) has a point as mentioned below, and thus the demand should be rejected.

1 Corrected invention of the case

The gist of the corrected invention is set forth below in the above No. 4.

2 A-1 invention and A-5 invention

(1) The Invention described in A-1

A A-1, a publication distributed before the filing of the Patent, has the following descriptions:

(A) "[Claim 1] A modifier for polyester-based resin consisting of calcium carbonate powder, a surface of which is treated with at least one kind of phosphoric compound selected from the group consisting of phosphoric acid, phosphorous acid, phosphine acid, phosphonic acid, and alkylester compounds thereof with a carbon number of 3 or less.

...

[Claim 4] A polyester composition comprising the modifier for polyester-based resin of any one of Claims 1 to 3.

[Claim 5] The polyester composition of Claim 4, wherein the content of the modifier exceeds 5% by weight and is 80% by weight or less.

[Claim 6] The polyester composition of Claim 4 or 5, obtained by kneading the modifier for polyester-based resin polyester and a polyester in a vent-type extruder.

...

[Claim 8] A film consisting of the polyester composition according to any one of Claims 4 to 6.

[Claim 9] A white film, wherein the film of Claim 8 is white." (the scope of claims,

Claims 1, 4 to 6, 8, and 9)

(B) "Example 1

Calcium carbonate powder with an average particle size of 1.2 μm and a specific surface area of 8.0 m^2/g was fed into a mixer with a fixed container named a Henschel mixer, and a temperature was elevated while stirring at a rotation speed of the rotary blade of 1500 rpm, and at a time point when an inner can temperature reached 90°C there was added, by spraying, a phosphorus compound of trimethyl phosphate so that trimethyl phosphate might amount to 5% by weight on a calcium carbonate basis. Thereafter, it was mixed for 10 minutes and subjected to a surface treatment. The amount of elemental phosphorus of the resultant modifier was measured by the colorimeter method and found to be 7,700 ppm." (paragraph [0038])

(C) "Example 12

By use of catalyst of 0.09 weight part of calcium acetate, 70 weight parts of dimethyl terephthalate and 60 weight parts of ethylene glycol were subjected to an ester exchange reaction in accordance with a conventional means, and then 60 weight parts of ethylene glycol slurry containing 50% by weight of the modifier produced in Example 1 was added, followed by the addition of 0.04 weight part of antimony trioxide as a polymerization catalyst.

Thereafter, a polycondensation reaction was conducted under a high temperature and a reduced pressure by a conventional means to obtain a polyester composition. The amount of elemental phosphorus in the polyester composition was 1,850 ppm. As a result of the observation of the particle dispersed state of calcium carbonate, neither aggregated particles nor coarse particles were observed.

Polyethylene terephthalate comprising 30% by weight of the obtained modifier was mixed with polyethylene terephthalate having an intrinsic viscosity of 0.65 dl/g so that the modifier might amount to 15% by weight, and further mixed with 0.02 weight part of a fluorescent brightener 'OB-1' (manufactured by Eastman Chemical Company) on the 100 parts of total polyesters. Subsequent to sufficient drying, the mixture was fed to an extruder at 290°C to melt and was extruded into a sheet through a T-shaped die and cooled and solidified in a cooling drum at 30°C to obtain an unstretched film. Subsequently, the unstretched film was heated to 95°C and stretched by 3.3 times in a machine direction and further heated to 100°C by 3.3 times stretching in a traverse direction, and heated to 200°C to obtain a film with a thickness of 50 μm. The obtained film had the following properties: a density of 1.23 g/cm^3 and a whiteness of 97%, an OD of 0.9, and a gloss level of 28%, and had excellent whiteness, concealment, and

gloss." (paragraphs [0044] to [0046])

B A-1 discloses in Example 12 (point (C)) mixing a polyester composition comprising 30% by weight of a modifier that has undergone a polycondensation reaction (hereinafter referred to as "polyester composition A") with a polyethylene terephthalate with an intrinsic viscosity of 0.65 dl/g so that the modifier may amount to 15% by weight on the total polyester basis to obtain a polyester composition (hereinafter referred to as "polyester composition B").

Considering the polyester composition A, this is just an intermediate composition to obtain the polyester composition B for producing a biaxially-stretched white polyester film. It goes without saying that Example 12 of A-1 did not form a film with the polyester composition A. Further, in view of the other description of A-1, there is no description showing that a film is formed with the polyester composition A, nor description on the premise of that.

Consequently, it cannot be said that the formation of a film with the polyester composition A is an obvious technical matter to a person skilled in the art, nor can it be seen from A-1 that the invention described in A-1 is based on the premise that a film be formed with the polyester composition A.

Therefore, it cannot be recognized that a white polyester film consisting of the polyester composition A is substantially described in A-1 (binding effects in the above court decision of cancellation).

C It can be said from the comprehensive understanding of the above points a(A) to (C) in combination of the above b that A-1 describes the following invention (hereinafter referred to as "A-1 invention 1".):

"a white film consisting of polyester composition comprising more than 5% by weight to 80% by weight or less of a modifier for polyester-based resin consisting of calcium carbonate powder, a surface of which is treated with at least one kind of phosphoric compound selected from the group consisting of phosphoric acid, phosphorous acid, phosphine acid, phosphonic acid, and alkylester compounds thereof with a carbon number of 3 or less, wherein the polyester composition is obtained by kneading the modifier and a polyester in a vent-type extruder,

wherein said calcium carbonate powder is obtained by spraying trimethyl phosphate onto a calcium carbonate powder with an average particle diameter of 1.2 μm and a specific surface area of 8.0 m^2/g so that trimethyl phosphate can amount to 5% by weight on a calcium carbonate basis and subjecting the same to a surface treatment,

wherein said polyester composition is obtained by: subjecting 70 weight parts of

dimethyl terephthalate and 60 weight parts of ethylene glycol to an esterification exchange reaction in the presence of a catalyst of 0.09 weight part of calcium acetate, followed by the addition of 60 weight parts of an ethylene glycol slurry comprising 50% by weight of the modifier and the subsequent addition of 0.04 weight part of antimony trioxide as a polymerization catalyst; subjecting to a polycondensation reaction to obtain a polyethyelene terephthalate comprising 30% by weight of the modifier; and mixing a polyethylene terephthalate with an intrinsic viscosity of 0.65 dl/g so that the modifier can amount to 15% by weight on a total polyethylene terephthalate basis,

wherein said white film is obtained by stretching an unstretched film obtained from said polyester composition B in a longitudinal direction, and further in a traverse direction."

D Further, it can be seen from the above point (A) that A-1 discloses the following invention (hereinafter referred to as "A-1 Invention 2").

"a white polyester film consisting of polyester composition comprising more than 5% by weight to 80% by weight or less of a modifier for polyester-based resin consisting of calcium carbonate powder, a surface of which is treated with at least one kind of phosphoric compound selected from the group consisting of phosphoric acid, phosphorous acid, phosphine acid, phosphonic acid, and alkylester compounds thereof with a carbon number of 3 or less, wherein the polyester composition is obtained by kneading the modifier and a polyester in a vent-type extruder."

(2) The Invention described in A-5

A A-5, a publication distributed before the filing of the Patent, has the following descriptions:

(A) "[Claim 1] A thermoplastic polyester composition comprising 0.05 to 10% by weight of vaterite-type calcium carbonate with an average particle size of 0.01 to 5 μm which is subjected to a surface treatment with a polyvalent carboxylic acid compound and 40 to 250 ppm of elemental phosphorus, wherein a concentration of terminal carboxyl group is in a range of 10 to 100 equivalent per 10^6 g polyester. [Claim 2] A film consisting of the polyester composition of Claim 1." (the scope of claims, Claims 1 and 2)

(B) "Example 1

The mixture of 10 parts of vaterite-type calcium carbonate and 89.7 parts of ethylene glycol and 0.3 part of a surface treating agent of sodium polyacrylate was subjected to a supersonic dispersion treatment for 10 minutes to obtain a vaterite-type

calcium carbonate/ethylene glycol slurry (A). Meanwhile, 100 parts of dimethyl terephthalate and 64 parts of ethylene glycol were subjected to an ester exchange reaction in the presence of the catalysts of 0.06 part of magnesium acetate and 0.03 part of antimony trioxide, and then to a resultant product there was added a phosphorus compound of 0.05 part of trimethyl phosphate, followed by addition of one part of the preliminarily-prepared slurry (A) to conduct a polycondensation reaction to obtain a polyethylene terephthalate composition with an intrinsic viscosity of 0.620 and a concentration of terminal carboxyl group of 40 equivalent/10^6 g. Subsequently, this polyethylene terephthalate composition was subjected to melt extrusion at 290°C to obtain an unstretched film. The unstretched film was then stretched three times at 90°C in a longitudinal direction and a traverse directions, respectively, and then subjected to heat fixing at 220°C for 10 seconds to obtain a biaxially-stretched film with a thickness of 15 μm.

The evaluation result of the resultant film is shown in Table 1. The resultant film had a content of vaterite-type calcium carbonate particles of 0.1% by weight and an average particle diameter of 0.3 μm, a content of elemental phosphorus of 98 ppm, and a concentration of terminal carboxyl group of 40 equivalent/10^6 g. Further, the film had a first-grade abrasion resistance, a first-grade anti-scratching property, Ra = 0.015 μm, and a coefficient of static friction of 0.70, and thus had excellent abrasion resistance and an excellent anti-scratching property.

Examples 2 to 7

The results of forming a film in a similar manner to Example 1 are shown in Table 1. The combination of the ranges of the present invention provided a film with excellent abrasion resistance and an excellent anti-scratching property as shown in Table 1." (paragraphs [0023] to [0025])

(C) "[Table 1]

表1

実施例		1	2	3	4	5	6	7
炭酸カルシウム粒子	結晶型	バテライト	バテライト	バテライト	バテライト	バテライト	バテライト	バテライト
	平均粒了径（μm）	0.3	3.5	0.1	0.4	0.2	0.3	0.25
	表面処理剤	ポリアクリル酸ナトリウム	ポリアクリル酸	アクリル酸・メタクリル酸コポリマ	ポリアクリル酸アンモニウム	セバシン酸	アクリル酸メタアクリル酸コポリマ	ポリアクリル酸ナトリウム
	処理量（対粒子重量%）	3.0	1.0	1.0	3.0	3.0	3.0	3.0
その他粒子	粒子径	−	シリカ	酸化ジルコニウム	酸化チタン	酸化アルミニウム	硫酸バリウム	フッ化カルシウム
	平均粒了径（重量%）	−	0.1	0.3	0.1	0.1	0.3	0.2
ポリエステル組成物	炭酸カルシウム粒子含有量（重量%）	0.1	0.1	0.1	6	0.05	0.3	0.3
	その他の粒子含有量（重量%）	− −	0.1	0.1	0.3	0.3	0.3	0.3
	リン元素含有量（ppm）	98	100	90	105	115	50	200
	カルボキシル末端基濃度（当量／10^6 g）	40	20	35	28	20	48	15
	固有粘度	0.620	0.613	0.617	0.620	0.621	0.615	0.620
フィルム特性	耐摩耗性	1級	2級	1級	2級	2級	1級	1級
	耐スクラッチ性	1級	1級	1級	2級	1級	1級	1級
	Ra（μm）	0.015	0.030	0.012	0.025	0.011	0.019	0.020
	静摩擦係数	0.7	0.5	0.7	0.5	0.5	0.7	0.6
総合評価		優	良	優	良	良	優	優

実施例　Example

炭酸カルシウム粒子　Calcium carbonate particle

その他粒子　Other particles

ポリエステル組成物　Polyester composition

フィルム特性　Film properties

総合評価　Comprehensive evaluation

結晶型　Crystal form

平均粒了径　Average particle diameter

表面処理剤　Surface treating agents

処理量（対粒子重量%）　Treated amount (percent by weight on a particle basis)

粒子径　Particle diameter

平均粒了径（重量%）　Average particle diameter (Percent by weight)

炭酸カルシウム粒子含有量（重量%）　Content of calcium carbonate particle (Percent by weight)

その他の粒子含有量（重量%）　Content of other particles (Percent by weight)

リン元素含有量　Content of elemental phosphorus

カルボキシル末端基濃度（当量／１０６ｇ）　Concentration of terminal carboxyl group (equivalent/10^6 g)

固有粘度　Intrinsic viscosity

耐摩耗性　Abrasion resistance

耐スクラッチ性　Anti-scratching property

静摩擦係数　Coefficient of static friction

バテライト　Vaterite

ポリアクリル酸ナトリウム　Sodium polyacrylate

ポリアクリル酸　Polyacrylic acid

アクリル酸ーメタクリル酸コポリマ　Acrylic acid/methacrylic acid copolymer

ポリアクリル酸アンモニウム　Ammonium polyacrylate

セバシン酸　Sebacic acid

アクリル酸メタアクリル酸コポリマ　Acrylic acid/methacrylic acid copolymer

ポリアクリル酸ナトリウム　Sodium polyacrylate

シリカ　Silica

酸化ジルコニウム　Zirconium oxide

酸化チタン　Titanium oxide

酸化アルミニウム　Aluminum oxide

硫酸バリウム　Barium sulfate

フッ化カルシウム　Calcium fluoride

１級　First-grade

２級　Second-grade

優　Excellent

良　Good

" (paragraph [0026])

B Further, it can be seen from the comprehensive understanding of the above points (A) to (C), in particular the description of Example 4, that A-5 discloses the following invention (hereinafter referred to as "A-5 Invention ".)

"A biaxially-stretched film obtained by a thermoplastic polyester composition comprising 6% by weight of vaterite-type calcium carbonate with an average particle size of 0.4 μm, 0.3% by weight of titanium oxide with an average particle size of 0.1 μm, which have been subjected to a surface treatment with ammonium polyacrylate, and 105 ppm of elemental phosphorus, wherein the thermoplastic polyester composition has a concentration of terminal carboxyl group of 28 equivalent per 10^6 g polyester,

wherein said thermoplastic polyester composition preliminarily prepares a vaterite-type calcium carbonate/ethylene glycol slurry (A) by mixing 10 parts of a vaterite-type calcium carbonate with an average particle size of 0.4 μm, 89.7 parts of ethylene glycol, and a surface treating agent of 0.3 part of ammonium polyacrylate, whereas 100 parts of dimethyl terephthalate and 64 parts of ethylene glycol were subjected to an ester exchange reaction in the presence of the catalysts of 0.06 part of magnesium acetate and 0.03 part of antimony trioxide, and then to a reaction product there was added 0.05 part of a phosphorus compound of trimethyl phosphate, followed by addition of 60 parts of a preliminarily-prepared slurry (A) and titanium oxide with an average particle diameter of 0.1 μm, and a polycondensation reaction was conducted, said thermoplastic polyester composition having an intrinsic viscosity of 0.620."

(3) The invention described in A-2

A A-2, a publication distributed before the filing of the Patent, has the following descriptions:

(A) "[Claim 1] A polyester composition obtained by kneading elemental

phosphorus, calcium carbonate, and a polyester in a vent-type extruder.

...

[Claim 5] The polyester composition according to any one of Claims 1 to 4, wherein the content of calcium carbonate is more than 5% by weight and 80% by weight or less on a polyester basis.

...

[Claim 8] A film consisting of the polyester composition according to any one of Claims 1 to 6.

[Claim 9] A white film, wherein the film of Claim 8 is white." (the scope of claims, Claims 1, 5, 8, and 9)

B Further, it can be seen from the above points (A) that A-2 discloses the following invention (hereinafter referred to as "A-2 invention".).

"A white film consisting of polyester composition obtained by kneading elemental phosphorus, calcium carbonate, and a polyester in a vent-type extruder, the composition comprising more than 5% by weight and 80% by weight or less of the content of calcium carbonate on a polyester basis."

(4) The Invention described in A-3

A A-3, a publication distributed before the filing of the Patent, has the following descriptions:

(A) "[Claim 1] A polyester composition comprising an inorganic particle, and each isolated product obtained from o-chlorophenol solution respectively comprising elemental phosphorus, and further the isolated product satisfying the following formula:

$B/A \leq 2.0$

A: Isolated product obtained from a polyester composition (% by weight on a polyester composition basis)

B: Isolated product obtained from a polyester composition after a melt heating treatment for 8 hours at 300°C (% by weight on a polyester composition basis)

[Claim 2] The polyester composition of Claim 1, wherein the content of the inorganic particles is 1 to 90% by weight.

[Claim 3] The polyester composition of Claim 1 or Claim 2, wherein the inorganic particle is calcium carbonate particle.

...

[Claim 9] A film consisting of the polyester composition according to any one of

Claims 1 to 7.

[Claim 10]

A white film, wherein the film of Claim 9 is white." (the scope of claims, Claims 1 to 3, 9 and 10)

B Further, it can be seen from the above point (A) that A-3 discloses the following invention (hereinafter referred to as "A-3 Invention").

"A white film consisting of polyester composition comprising 1 to 90% by weight of calcium carbonate particle, and each isolated product obtained from o-chlorophenol solution respectively comprising elemental phosphorus, and further the isolated product satisfying the following formula:

$B/A \leq 2.0$

A: Isolated product obtained from a polyester composition (% by weight on a polyester composition basis)

B.: Isolated product obtained from a polyester composition after a melt heating treatment for 8 hours at 300°C (% by weight on a polyester composition basis)"

(5) The Invention described in A-4

A A-4, a publication distributed before the filing of the Patent, has the following descriptions:

(A) "A method for producing a white polethylene terephthalate film, comprising the steps of: subjecting a mixture consisting of 100 weight parts of polyethylene terephthalate, 5 to 25 weight parts of fine particulate calcium carbonate, and 0.005 to 1 weight part of phosphorus compound to a melt extrusion; followed by biaxial stretching." (the scope of the claims)

B It can be seen from the above point (A) that A-4 discloses the following invention (hereinafter referred to as "A-4 Invention").

"A white polyethylene terephthalate film obtained by subjecting a mixture consisting of 100 weight parts of polyethylene terephthalate, 5 to 25 weight parts of fine particulate calcium carbonate, and 0.005 to 1 weight part of phosphorus compound to melt extrusion, followed by biaxial stretching."

(6) The invention described in A-7

A A-7, a publication distributed before the filing of the Patent, has the following descriptions:

(A) "[Claim 1] A method for forming a polyester film, comprising the steps of

pre-heating a polyester film mainly comprising polyethylene terephthalate with a difference between a crystallization temperature on cooling Tc (C) and a glass transition temperature Tg (C) (Tc-Tg) of 60°C or less before a first stretching so as to cause a degree of crystallization to be 0.5 to 25%, and subjecting to formation." (the scope of the claims, Claim 1)

B Further, it can be seen from the above point (A) that A-7 discloses the following invention (hereinafter referred to as "A-7 Invention").

"A polyester film obtained by pre-heating a polyester film mainly comprising polyethylene terephthalate with a difference between a crystallization temperature on cooling Tc (C) and a glass transition temperature Tg (C) (Tc-Tg) of 60°C or less before a first stretching so as to cause a degree of crystallization thereof to be 0.5 to 25%, and subjecting to formation."

3 Reason for invalidation 1-1

The demandant's allegation of reason for invalidation 1-1 is lack of novelty of the corrected inventions 1 to 6 on the basis of A-1 as a main cited reference, as described in the above No. 5_1(1). First, the novelty of the corrected invention 1 is considered.

(1) As for the corrected invention 1

A Identical features and Different features

Comparing the A-1 invention 1 with the corrected invention 1, the identical features and the different features are set forth as below, respectively:

- Identical features

A biaxially-stretched white polyester film consisting of a polyester composition comprising 5% by weight or more of an inorganic particle

- Different feature 1-1-1

Regarding the concentration of terminal carboxyl group of polyester composition, the corrected invention 1 specifies it as "35 equivalent/10^6 g polyester or less," whereas the A-1 invention 1 fails to disclose such matter for specifying the invention

- Different feature 1-1-2

Regarding a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of a polyester composition, the corrected

invention 1 specifies it as "30≤Tcc-Tg≤60," whereas the A-1 invention 1 fails to disclose such matter for specifying the invention

B Examination on Different Features

Different features 1-1-1 and 1-1-2 are considered in the following.

(A) A polyester composition B of the A-1 invention 1 was obtained by mixing the polyester composition A with a polyethylene terephthalate having an intrinsic viscosity of 0.65 dl/g so that the modifier may amount to 15% by weight (i.e., so as to be diluted twice), whereas it is totally unknown as to the concentration of terminal carboxyl group and a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of the polyethylene terephthalate with an intrinsic viscosity of 0.65 dl/g to be used for the dilution.

(B) Further, it is recognized that each value of the polyester composition A is of course different from each value of the concentration of terminal carboxyl group and the difference between the crystallization temperature on heating (Tcc) and the glass transition temperature (Tg) of the polyester composition B after mixing with a polyester composition A a polyethylene terephthalate having an intrinsic viscosity of 0.65 dl/g where the concentration of terminal carboxyl group and the difference between the crystallization temperature on heating (Tcc) and the glass transition temperature (Tg) are unknown.

Consequently, even if it were recognized from A-10 (Certificate of experimental results) that the white polyester film A of the A-1 invention 1 should satisfy both of the matters of "a concentration of terminal carboxyl group is 35 equivalent/10^6 g polyester or less" and "a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) satisfies the relationship of 30≤Tcc-Tg≤60," it cannot be said from A10 that even the polyester composition B of A-1 invention 1 should satisfy both of the matters of "a concentration of terminal carboxyl group is 35 equivalent/10^6 g polyester or less" and "a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) satisfies the relationship of 30≤Tcc-Tg≤60."

C Summary

For the above reasons, it cannot be said that the corrected invention 1 is identical to the A-1 invention 1.

(2) The corrected inventions 2 to 6

Each of Claims 2 to 6 directly or indirectly depends on Claim 1. Further, as considered in the above item (1), it cannot be said that the corrected invention 1 according to Claim 1 is identical to A-1 invention 1. Therefore, it cannot be said that the corrected inventions 2 to 6 according to Claims 2 to 6 are also identical to the A-1 invention 1.

(3) Summary

As described above, the Demandant's argument about the reason for invalidation 1-1 is groundless.

4 Reason for invalidation 1-2

The demandant's allegation of reason for invalidation 1-2 is lack of novelty of the corrected inventions 1 to 6 on the basis of A-5 as a cited reference, as described in the above No. 5_1(1). First, the novelty of the corrected invention 1 is considered.

(1) As for the corrected invention 1

A Identical features and Different features

Comparing the A-5 invention with the corrected invention 1, the identical features and the different features between the two inventions are set forth as below, respectively:

- Identical features

A biaxially-stretched polyester film consisting of a polyester composition comprising 5% by weight or more of an inorganic particle, wherein a concentration of terminal carboxyl group of the polyester composition is 35 equivalent/10^6 g polyester or less

- Different feature 5-1

Regarding a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of a polyester composition, the corrected invention 1 specifies it as "$30 \leq Tcc-Tg \leq 60$," whereas the A-5 invention fails to disclose such matter for specifying the invention

- Different feature 5-2

Regarding a biaxially-stretched polyester film, the corrected invention 1 specifies it as "white," whereas the A-5 invention fails to disclose such matter for

specifying the invention

B Consideration of different feature 5-1

(A) It is considered whether the polyester composition of A-5 invention might satisfy the requirement of "a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) satisfies the relationship of $30 \leq Tcc-Tg \leq 60$."

(B) Demandant submitted Evidence A-11 (Certificate of experimental results (Part 2)) including a result of replication study of the polyester composition obtained in Example 4 of A-5 as a fact to be proven. Further, according to Evidence A-11, the composition of Example 4 of A-5 has "a concentration of terminal carboxyl group of 30 equivalent/10^6 g polyester" and "a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of 51" (a value measured at a heating rate of 16°C/min). Therefore, Example 4 of A-5 allegedly satisfies the matters for specifying the corrected invention 1.

Example 4 of A-5 describes a concentration of terminal carboxyl group of the polyester composition of 28 equivalent/10^6 g polyester, which does not precisely match a result of A-11 of 30 equivalent/10^6 g polyester. Further, the polyester composition of Example 4 of A-5 has an intrinsic viscosity of 0.620, whereas that of Evidence A-11 has an intrinsic viscosity of 0.61. No precise matching can be found between them also in this respect. Consequently, it cannot be said that Evidence A-11 is a complete replication study of Example 4 of A-5.

(C) On the other hand, the demandee submitted Evidence B-4 (Certificate of experimental results) as a result of replication study of the polyester composition obtained in Example 4 of A-5. According to that, Tcc-Tg of the polyester composition of Example 4 of A-5 is allegedly 65°C, and thus it does not satisfy the matters for specifying the corrected invention 1.

Evidence B-4 fails to disclose the concentration of terminal carboxyl group of polyester composition and the intrinsic viscosity of the polyester composition is 0.614, which does not precisely match the intrinsic viscosity of Example 4 of Evidence A-5 of 0.620. Consequently, it cannot be said that Evidence B-4 is a complete replication study of Example 4 of Evidence A-5.

(D) As aforementioned, although it cannot be said that Evidence A-11 and Evidence B-4 both completely reproduce Example 4 of Evidence A-5, it can be seen from both Evidences that the value of Tcc-Tg differs regardless of raw materials described in Example 4 of Evidence A-5 being used in amounts described and in a

condition described for a reproductive experiment. However, the cause of the difference in Tcc-Tg is unknown (i.e., what polymerization condition of polyester is the cause of the difference in Tcc-Tg?).

Incidentally, in a technical field of polyesters, it is recognized as a matter of common technical knowledge that a difference in polymerization conditions of polyesters may result in the change of various physical property values of the obtained polyester composition. For example, when it comes to the polycondensation temperature of polyesters, Evidence B-4 adopts 295°C, whereas Evidence A-11 is silent about that. First of all, it is unknown what temperature is employed even in Example 4 of Evidence A-5.

Consequently, it cannot be said that the description of a polymerization condition of a polyester in Example 4 of Evidence A-5 sufficiently discloses a condition to conduct a reproductive experiment.

(E) "Invention described in publication" as specified in Article 29(1)(iii) of the Patent Act is not only an invention definitely described in a publication. It is supposed that a matter that a person skilled in the art could easily understood from the described matters in the publication in view of the common technical knowledge of a person skilled in the art may also comprise the basis of the finding of "Invention described in publication" as a matter essentially described (although not literally).

When it comes to this case, in a case where a considerable part of the configuration specifying the corrected invention 1 is described in Example 4 of Evidence A-5, and a part of the configuration specifying the invention (a value of Tcc-Tg) is not definitely described, nor is the specific configuration (a value of Tcc-Tg) definite in view of the common technical knowledge of a person skilled in the art, so long as a person skilled in the art could confirm the specific configuration (a value of Tcc-Tg) only if a person skilled in the art should produce a polyester composition by a reproductive experiment of Example 4 of Evidence A-5, the specific configuration of the polyester composition could be easily known to a person skilled in the art by the example described in the publication and the reproductive experiment. Therefore, such case may be construed as being evaluated as the "Invention described in publication" by taking into consideration the description in the publication and the properties to be confirmed by a reproductive experiment of the example.

(F) As discussed in the above (D), however, the value of Tcc-Tg may not be determined by the description of the polymerization condition of Example 4 of Evidence A-5 and a reproductive experiment in view of the common technical

knowledge, and it is indefinite as to whether a reproduction of Example 4 of Evidence A-5 might satisfy the configuration (a value of Tcc-Tg) specified by the corrected invention 1. Therefore, it cannot be said that a person skilled in the art could easily confirm the specific configuration (the value of Tcc-Tg) by producing the polyester composition through the reproductive experiment of Example 4 of Evidence A-5.

Consequently, if the value of Tcc-Tg varies depending on a difference in a polymerization condition due to unknown cause, it cannot be said as the "Invention described in publication" by taking into consideration the description of Example 4 of Evidence A-5 and the properties to be confirmed by one of the reproductive experiment of Example 4.

Accordingly, it cannot be said that the polyester composition of A-5 invention satisfies the requirement of "a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) satisfies the relationship of $30 \leq Tcc-Tg \leq 60$."

C Summary

For the above reasons, it cannot be said that the corrected invention 1 is identical to the A-5 invention without considering the different feature 5-2.

(2) The corrected inventions 2 to 6

Each of Claims 2 to 6 directly or indirectly depends on Claim 1. Further, as considered in the above item (1), it cannot be said that the corrected invention 1 according to Claim 1 is identical to the A-5 invention. Therefore, it cannot be said that the corrected inventions 2 to 6 according to Claims 2 to 6 are also identical to the A-5 invention.

(3) Summary

As described above, the Demandant's argument about the reason for invalidation 1-2 is groundless.

5 Reason for invalidation 2-1

The demandant's allegation of reason for invalidation 2-1 is lack of inventive step of the corrected inventions 1 to 6 on the basis of any of A-1 to A-4 as a main cited reference, as described in the above No. 5_1(2). First, the inventive step of the corrected invention 1 is considered.

(1) As for the corrected invention 1

A Identical features and different features between the corrected invention 1 and the A-1 invention 2

Comparing the A-1 invention 2 with the corrected invention 1, the identical features and the different features are set forth as below, respectively:

- Identical features

A white polyester film consisting of a polyester composition comprising 5% by weight or more of an inorganic particle.

- Different feature 1-2-1

Regarding the concentration of terminal carboxyl group of polyester composition, the corrected invention 1 specifies it as "35 equivalent/10^6 g polyester or less," whereas the A-1 invention 2 fails to disclose such matter for specifying the invention.

- Different feature 1-2-2

Regarding a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of a polyester composition, the corrected invention 1 specifies it as "$30 \leq Tcc-Tg \leq 60$," whereas the A-1 invention 2 fails to disclose such matter for specifying the invention.

- Different feature 1-2-3

Regarding a white polyester film, the corrected invention 1 specifies it as "biaxially-stretched," whereas the A-1 invention 2 fails to disclose such matter for specifying the invention.

B Consideration on the different feature 1-2-1

(A) A-5 describes, as pointed out in the above No. 6_2(2)a(A), "A film consisting of a thermoplastic polyester composition comprising 0.05 to 10% by weight of vaterite-type calcium carbonate with an average particle size of 0.01 to 5 μm which is subjected to a surface treatment with a polyvalent carboxylic acid compound and 40 to 250 ppm of elemental phosphorus, and wherein a concentration of terminal carboxyl group is in a range of 10 to 100 equivalent per 10^6 g polyester"; however, calcium carbonate of A-1 invention 2 is not subjected to a surface treatment with a polyvalent carboxylic acid compound, nor is it limited to a vaterite-type. Therefore, there is no motivation to apply the matter described in A-5 to A-1 invention 2. Further, even if applicable, there is no reason to set an upper limit of the concentration of

terminal carboxyl group of polyester to 35 equivalent per 10^6 gram.

(B) Further, A-6 adds 0.01 to 3% by weight of inert inorganic particles in producing a polyester (the scope of the claims). Thus it does not contain 5% by weight or more of inorganic particles. Therefore, there is no motivation to apply the matter described in Evidence A-6 to A-1 invention 2. Even if applicable, there is no reason to set an upper limit of the concentration of terminal carboxyl group of polyester to 35 equivalent per 10^6 gram.

(C) Consequently, it can no longer be said that even a person skilled in the art would easily conceive of adjusting an upper limit of the concentration of terminal carboxyl group of a polyester to 35 equivalent per 10^6 gram in A-1 invention 2. Specifically,
the configuration of the corrected invention 1 according to different feature 1-2-1 was not easily conceivable on the basis of A-1 invention 2.

C Consideration on the different feature 1-2-2

(A) The technical meaning of adjusting a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of a polyester to $30 \leq Tcc-Tg \leq 60$ in the corrected invention 1 is as described in the patent specification after the correction (hereinafter referred to as "the corrected specification"). It reads: "From the viewpoint of the stretched film-forming ability in forming into, e.g., a film as well as whiteness, concealment, and mechanical properties of the resultant molded articles including film, a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) should satisfy the following formula, ... if a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) is less than 30, the polyester composition has high crystallinity and poor stretched film-forming ability in forming into, e.g., a film. On the other hand, if the difference exceeds 60, a resultant molded article such as a film may have poor whiteness, concealment, and mechanical properties, and thus be undesirable." (paragraph ([0026]). Meanwhile, regarding the meaning of Tcc-Tg, A-7 discloses that "The inventors have intensively studied to fundamentally improve the uneven film thickness, and as a result have found that a polyester film may be formed with a uniform thickness without extremely less uneven thickness and without periodic uneven thickness by specifying thermal properties and the crystallinity prior to the stretching of a resin in stretching a polyethylene terephthalate." (paragraph [0005]), "Furthermore, normal polyethylene terephthalate has a glass transition temperature Tg of 69 to 70°C, and a crystallization temperature Tc on cooling of 135 to 140°C, which does not satisfy

the value of Tc-Tg of the present invention falling into a temperature range of 60°C or less. In order to effectively cause thermal crystallization with a commonly used non-adhesive roll material such as Teflon or silicone, it is necessary to adjust (Tc-Tg) to 60°C or less to sufficiently increase a crystallization speed. To achieve this, a polymer should be modified by the addition of a crystallization promoting agent, the copolymerization or the blending of the other monomers or polymers and proper selection of polymerization catalyst, etc." (paragraph [0009]), which obviously shows that the problem is different.

Hence, there is no motivation to apply the matter described in Evidence A-7 to A-1 invention 2. Even if applicable, it is difficult for a person skilled in the art to predict the effects caused such as the stretched film-forming ability, whiteness, concealment, and mechanical properties. Furthermore, first of all, there is no reason to adjust the lower limit of the difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of polyester to 30.

(B) Consequently, it can no longer be said that even a person skilled in the art would easily conceive of adjusting the difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of polyester to $30 \leq Tcc-Tg \leq 60$ in the A-1 invention 2. Specifically, the configuration of the corrected invention 1 according to different feature 1-2-2 was not easily conceivable on the basis of A-1 invention 2.

D Summary

For the above reasons, without considering the different feature 1-2-3, it cannot be said that the corrected invention 1 was easily conceivable by a person skilled in the art on the basis of A-1 invention 2 as a major cited invention in view of the inventions described in Evidences A-5 to A-7.

E Identical features and Different features between the corrected invention 1 and the A-2 invention

Comparing the A-2 invention with the corrected invention 1, the identical features and the different features are set forth as below, respectively:

- Identical features

A white polyester film consisting of a polyester composition comprising 5% by weight or more of an inorganic particle.

- Different feature 2-1

Regarding the concentration of terminal carboxyl group of polyester composition, the corrected invention 1 specifies it as "35 equivalent/10^6 g polyester or less," whereas the A-2 invention fails to disclose such matter for specifying the invention.

- Different feature 2-2

Regarding a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of a polyester composition, the corrected invention 1 specifies it as "$30 \leq Tcc-Tg \leq 60$," whereas the A-2 invention fails to disclose such matter for specifying the invention.

- Different feature 2-3

Regarding white polyester film, the corrected invention 1 specifies it as "biaxially-stretched," whereas the A-2 invention fails to disclose such matter for specifying the invention.

F Consideration on the different feature 2-1

Calcium carbonate of the A-2 invention was not subjected to a surface treatment by a polyvalent carboxylic acid compound, nor limited to a vaterite-type. Therefore, for the same reason as discussed in the above b., it can no longer be said that even a person skilled in the art would easily conceive of adjusting an upper limit of the concentration of terminal carboxyl group of polyesters to 35 equivalent per 10^6 gram in the A-2 invention. Specifically, the configuration of the corrected invention 1 according to different feature 2-1 was not easily conceivable on the basis of the A-2 invention.

G Consideration on the Different feature 2-2

For the same reason as discussed in the above c., it can no longer be said that even a person skilled in the art would easily conceive of adjusting a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of polyester to $30 \leq Tcc-Tg \leq 60$ in the A-2 invention. Specifically, the configuration of the corrected invention 1 according to different feature 2-2 was not easily conceivable on the basis of A-2 invention.

H Summary

For the above reasons, without considering the different feature 2-3, it cannot be

said that the corrected invention 1 was easily conceivable by a person skilled in the art on the basis of the A-2 invention as a major cited invention in view of the invention described in Evidences A-5 to A-7.

I Identical features and Different features between the corrected invention 1 and the A-3 invention

Comparing the A-3 invention with the corrected invention 1, the identical features and the different features are set forth as below, respectively:

- Identical features

A white polyester film consisting of a polyester composition comprising 5% by weight or more of an inorganic particle.

- Different feature 3-1

Regarding the concentration of terminal carboxyl group of polyester composition, the corrected invention 1 specifies it as "35 equivalent/10^6 g polyester or less," whereas the A-3 invention fails to disclose such matter for specifying the invention.

- Different feature 3-2

Regarding a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of a polyester composition, the corrected invention 1 specifies it as "$30 \leq Tcc-Tg \leq 60$," whereas the A-3 invention fails to disclose such matter for specifying the invention.

- Different feature 3-3

Regarding white polyester film, the corrected invention 1 specifies it as "biaxially-stretched," whereas the A-3 invention fails to disclose such matter for specifying the invention.

J Consideration on the Different feature 3-1

Calcium carbonate of the A-3 invention was not subjected to a surface treatment by a polyvalent carboxylic acid compound, nor limited to a vaterite-type. Therefore, for the same reason as discussed in the above b., it can no longer be said that even a person skilled in the art would easily conceive of adjusting an upper limit of the concentration of terminal carboxyl group of polyesters to 35 equivalent per 10^6 gram in the A-3 invention. Specifically, the configuration of the corrected invention 1 according to different feature 3-1 was not easily conceivable on the basis of the A-3 invention.

K Consideration on the Different feature 3-2

For the same reason as discussed in the above c., it can no longer be said that even a person skilled in the art would easily conceive of adjusting a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of polyester to $30 \leq Tcc-Tg \leq 60$ in the A-3 invention. Specifically, the configuration of the corrected invention 1 according to different feature 3-2 was not easily conceivable on the basis of the A-3 invention.

L Summary

For the above reasons, without considering the different feature 3-3, it cannot be said that the corrected invention 1 was easily conceivable by a person skilled in the art on the basis of the A-3 invention as a major cited invention in view of the inventions described in Evidences A-5 to A-7.

M Identical features and Different features between the corrected invention 1 and the A-4 invention

Comparing the A-4 invention with the corrected invention 1, the identical features and the different features are set forth as below, respectively:

- Identical features

A biaxially-stretched white polyester film consisting of a polyester composition comprising 5% by weight or more of an inorganic particle.

- Different feature 4-1

Regarding the concentration of terminal carboxyl group of polyester composition, the corrected invention 1 specifies it as "35 equivalent/10^6 g polyester or less," whereas the A-4 invention fails to disclose such matter for specifying the invention.

- Different feature 4-2

Regarding a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of a polyester composition, the corrected invention 1 specifies it as "$30 \leq Tcc-Tg \leq 60$," whereas the A-4 invention fails to disclose such matter for specifying the invention.

N Consideration on the Different feature 4-1

Calcium carbonate of the A-4 invention was not subjected to a surface treatment by a polyvalent carboxylic acid compound, nor limited to a vaterite-type. Therefore, for the same reason as discussed in the above b., it can no longer be said that even a person skilled in the art would easily conceive of adjusting an upper limit of the concentration of terminal carboxyl group of a polyester to 35 equivalent per 10^6 gram in the A-4 invention. Specifically, the configuration of the corrected invention 1 according to different feature 4-1 was not easily conceivable on the basis of the A-4 invention.

O Consideration on the Different feature 4-2

For the same reason as discussed in the above c., it can no longer be said that even a person skilled in the art would easily conceive of adjusting a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of polyester to $30 \leq Tcc-Tg \leq 60$ in the A-4 invention. Specifically, the configuration of the corrected invention 1 according to the different feature 4-2 was not easily conceivable on the basis of the A-4 invention.

P Summary

For the above reasons, it cannot be said that the corrected invention 1 was easily conceivable by a person skilled in the art on the basis of the A-4 invention as a major cited invention in view of the invention described in Evidences A-5 to A-7.

(2) The corrected inventions 2 to 6

Each of Claims 2 to 6 directly or indirectly depends on Claim 1, and as considered in the above item (1), it cannot be said that the corrected invention 1 according to Claim 1 was easily conceivable by a person skilled in the art on the basis of any of Evidences A-1 to A-4 as a major cited reference. Therefore, it cannot be said that the corrected inventions 2 to 6 according to Claims 2 to 6 were also easily conceivable by a person skilled in the art.

(3) Summary

As described above, the Demandant's argument about the reason for invalidation 2-1 is groundless for the inventions according to Claims 1 to 6 of the Patent.

6 Reason for invalidation 2-2

The demandant's allegation of reason for invalidation 2-2 is lack of inventive step of the corrected inventions 1 to 6 on the basis of A-7 as a main cited reference, as described in the above No. 5_1(2). First, the inventive step of the corrected invention 1 is considered.

(1) As for the corrected invention 1

A Identical features and Different features

Comparing the A-7 invention with the corrected invention 1, the identical features and the different features are set forth as below, respectively:

- Identical features

Polyester film consisting of a polyester composition that satisfies the difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of Tcc-Tg≤60

- Different feature 7-1

The corrected invention 1 specifies "comprising 5% by weight or more of inorganic particles," whereas the A-7 invention fails to disclose such matter for specifying the invention.

- Different feature 7-2

Regarding the concentration of terminal carboxyl group of a polyester composition, the corrected invention 1 specifies it as "35 equivalent/10^6 g polyester or less," whereas the A-7 invention fails to disclose such matter for specifying the invention.

- Different feature 7-3

Regarding a lower limit of the difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of a polyester composition, the corrected invention 1 specifies it as "30," whereas the A-7 invention fails to disclose such matter for specifying the invention.

- Different feature 7-4

Regarding a polyester film, the corrected invention 1 specifies it as "white," whereas the A-7 invention fails to disclose such matter for specifying the invention.

- Different feature 7-5

Regarding polyester film, the corrected invention 1 specifies it as "biaxially-stretched," whereas the A-7 invention fails to disclose such matter for specifying the invention.

B Consideration of different feature 7-1

(A) The A-7 invention does not include inorganic particles as an essential component. Further, A7 discloses that "Furthermore, normal polyethylene terephthalate has a glass transition temperature Tg of 69 to 70°C, and a crystallization temperature Tc on cooling of 135 to 140°C, which does not satisfy the value of Tc-Tg of the present invention falling into a temperature range of 60°C or less. In order to effectively cause thermal crystallization with a commonly used non-adhesive roll material such as Teflon or silicone, it is necessary to adjust (Tc-Tg) to 60°C or less to sufficiently increase a crystallization speed. To achieve this, a polymer should be modified by an addition of a crystallization promoting agent, copolymerization of the other monomers, or a blending of polymers, proper selection of a polymerization catalyst, etc.

A crystallization promoting agent used for this purpose is not particularly be limited to, but includes, for example, inorganic additives such as talc, mica, kaolin, clay, zeolite, glass fibers, silica, alumina, zinc oxide, magnesium oxide, antimony oxide, calcium carbonate, calcium sulfate, barium sulfate, calcium silicate, and magnesium silicate; metal salts of organic carboxylic acid such as magnesium acetate, sodium benzoate, calcium benzoate, sodium terephthalate, lithium terephthalate, barium stearate, calcium stearate, and sodium stearate; or a metal salt or ester compound of phosphonic acid or phosphine acid for preferable ones. These crystallization promoting agents may be used solely or in combination. It is necessary to add the agent so that (Tc-Tg) of polyester may become 60°C or less. The amount of addition is usually in a range of 0.01 to 10% by weight. The crystallization promoting agent may be added in a polyester polymerization, or otherwise blended after polymerization." (paragraphs [0009] and [0010]).

(B) The A-7 invention discloses, however, the addition of a crystallization promoting agent as one means for adjusting (Tc-Tg) of a polyester to a temperature range of 60°C or less, and the crystallization promoting agent to be added may include a number of organic materials as well as inorganic materials as aforementioned.

(C) Further, the additive amount of the crystallization promoting agent is in a range of 0.01 to 10% by weight. The crystallization promoting agent is added for promoting crystallization. Thus it sufficiently achieves the goal if the amount sufficient to promote the crystallization is added. In fact, the example of A-7 uses a resin in which calcium stearate is contained in an amount of 0.5% by weight as a crystallization promoting agent.

(D) Consequently, it can no longer be said that even a person skilled in the art would easily conceive of adopting a means for adding a crystallization promoting agent

so that (Tc-Tg) of polyester might fall within a temperature range of 60°C or less, and then selecting the inorganic particle of the corrected invention 1 such as calcium carbonate from the ones exemplified as the crystallization promoting agent and further adjusting the additive amount to in particular 5% by weight or more in the A-7 invention.

Specifically, the configuration of the corrected invention 1 according to different feature 7-1 was not easily conceivable on the basis of the A-7 invention.

C Consideration on the Different feature 7-2

(A) A-5 describes, as pointed out in the above No. 6_2(2)a(A),

"A film consisting of a thermoplastic polyester composition comprising 0.05 to 10% by weight of a vaterite-type calcium carbonate with an average particle size of 0.01 to 5 μm which is subjected to a surface treatment with a polyvalent carboxylic acid compound and 40 to 250 ppm of an elemental phosphorus, and wherein a concentration of terminal carboxyl group is in a range of 10 to 100 equivalent per 10^6 g polyester"; however, first of all, the A-7 invention does not include inorganic particles as an essential component, nor are the inorganic particles limited to calcium carbonate. In addition, calcium carbonate described in A-7 was not subjected to a surface treatment by a polyvalent carboxylic acid compound, nor limited to a vaterite-type.
Consequently, there is no motivation to apply the matters described in the A-5 to A-7 inventions. Even if applicable, there is no reason to set an upper limit of the concentration of terminal carboxyl group of polyester to 35 equivalent per 10^6 gram.

(B) Further, Evidence A-6 adds 0.01 to 3% by weight of inert inorganic particles in producing a polyester (the scope of the claims). Thus it does not comprise 5% by weight or more of inorganic particles. Therefore, there is no motivation to apply the matter described in Evidence A-6 to the A-7 invention. Even if applicable, there is no reason to set an upper limit of the concentration of terminal carboxyl group of a polyester to 35 equivalent per 10^6 gram.

(C) Further, Evidence A-8 only discloses that the polyethylene terephthalate for a film is suitably a polymer with less terminal group content and high thermal stability in general, and preferable is a polymer with more -OH end compared to -COOH end. It simply shows a preferable trend of polyethylene terephthalate for a film. It does not show specifically a value of concentration of terminal carboxyl group of a polyester.

(D) Further, Evidence A-9 discloses that the amount of terminal carboxyl group is specified as 45 (equivalent/10^6 g) or less in a biaxially-stretched polyester film (the

scope of the claims, etc.); however, Evidence A-9 is directed to a film for packaging. The technical meaning of the specification is set forth as below "If the amount of terminal carboxyl group in a film goes beyond 45 equivalent/10^6 g, a streaky ridge tends to be formed in a film due to the generation of thermally degraded products through heat history when subjected to a melt extrusion by a well-known melt extrusion apparatus such as an extruder in the process of forming a film, which compromises the planarity of a film and thus is unfavorable." (paragraph [0009]).

As described above, there is no motivation to apply the matter described in Evidence A-9 to the A-7 invention. Even if applicable, there is no reason to set an upper limit of the concentration of terminal carboxyl group of a polyester to 35 equivalent per 10^6 gram.

(E) As aforementioned, even if Evidences A-5 to A-9 are considered in combination, there is no reason to set an upper limit of the concentration of terminal carboxyl group of a polyester to 35 equivalent per 10^6 gram.

(F) Consequently, it can no longer be said that even a person skilled in the art would easily conceive of adjusting an upper limit of the concentration of terminal carboxyl group of a polyester to 35 equivalent per 10^6 gram in the A-7 invention. Specifically, the configuration of the corrected invention 1 according to different feature 7-2 was not easily conceivable on the basis of the A-7 invention.

D Consideration on the different feature 7-3

(A) As discussed in the above item 5(1)c., the corrected invention 1 and the A-7 invention have different problems to be solved. Therefore, it is impossible to derive the lower limit of the difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of polyester as 30. Even if derivable, it is difficult for a person skilled in the art to predict the effects caused, such as good stretched film-forming ability.

(B) Consequently, it can no longer be said that even a person skilled in the art would easily conceive of adjusting the lower limit of the difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) of polyester to 30 in the A-7 invention. Specifically, the configuration of the corrected invention 1 according to different feature 7-3 was not easily conceivable on the basis of the A-7 invention.

E Consideration on the Different feature 7-4

(A) A-7 fails to describe the polyester film as white; rather, it discloses the effects that "film is made highly transparent" (paragraph [0057]). In view of this, it cannot be said that the polyester film according to the A-7 invention is white, but it can be said that there is a disincentive to make a polyester film according to the A-7 invention white.

(B) Consequently, it can no longer be said that even a person skilled in the art would easily conceive of making a polyester film white in the A-7 invention. Specifically, the configuration of the corrected invention 1 according to different feature 7-4 was not easily conceivable on the basis of A-7 invention.

F Summary

As aforementioned, without considering the different feature 7-5, it cannot be said that the corrected invention 1 was easily conceivable by a person skilled in the art on the basis of the A-7 invention as a major cited invention in view of the inventions described in A-5, A-6, A-8, and A-9.

(2) The corrected inventions 2 to 6

Each of Claims 2 to 6 directly or indirectly depend on Claim 1, and it cannot be said that a person skilled in the art could have easily conceived of the corrected invention 1 according to Claim 1 on the basis of Evidence A-7 as a main cited reference in view of Evidences A-5, A-6, A-8, and A-9, as considered in the above item (1). Therefore, it cannot be said that a person skilled in the art could have easily conceived of the corrected inventions 2 to 6 according to Claims 2 to 6 on the basis of Evidence A-7 as a main cited reference in view of Evidences A-5, A-6, A-8, and A-9.

(3) Summary

As described above, the demandant's argument about the reason for invalidation 2-2 is groundless for the inventions according to Claims 1 to 6 of the Patent.

7 Reason for invalidation 3

(1) The description of the corrected specification

The corrected specification has the following descriptions.

"[Field of the Invention]

The present invention relates to a white polyester film consisting of polyester

composition, and in detail a white polyester film consisting of the polyester composition with a specific concentration of terminal carboxyl group and thermal properties, wherein the polyester composition comprises a large amount of inorganic particles. Further in detail, the present invention relates to a white polyester film suitable for a substrate such as photographic paper, X-ray screen, receiver paper, magnetic recording card, label, delivery ticket for home-delivery service, etc., display boards, and white boards.

[Conventional Art]

...

Conventionally, it is well-known to add a large amount of white inorganic particles to polyethylene terephthalate to obtain a white film. It is known, for example, that Japanese Patent Publication No. S56-4901 adds a large amount of titanium oxide and barium sulfate, and Japanese Patent Publication No. S60-30930 adds a large amount of barium sulfate, and further Japanese Patent Publication No. S43-12013 adds a large amount of calcium carbonate, and further Japanese Unexamined Patent Application Publication No. 51-28141 and Japanese Unexamined Patent Application Publication No. S61-209260 disclose a method of kneading an inorganic filler powder or a white inorganic pigment in a high level of concentration.

The above prior art method of simply adding or kneading inorganic particles to polyester causes the obtained polyester composition containing inorganic particles:

*1 (Trial decision note: use this representation because a number surrounded by a circle may not be used; the same shall apply hereinafter) has poor dispersibility of inorganic particles into a polyester composition, and

coarse particles or aggregated particles of inorganic particles frequently cause a film breakage in a process of stretched film formation when the polyester composition is used to form a molded article such as a film;

*2 A large amount of inorganic particles contained therein makes the crystallinity of a polyester composition high due to the interaction between an inorganic particle and a polyester, and impose a limitation on the stretched film-forming condition in the process of forming a molded article such as a film and compromise productivity; and

*3 The particle surface activity causes interaction between a particle and a polyester in a melting process when forming into a molded article such as a polyester film. It causes the defects of poor heat resistance represented by the generation of foreign materials or foaming, and an obtained molded article such as a film has poor whiteness and concealment.

Further, in order to solve the above defects, Japanese Unexamined Patent Application Publication No. S62-207337 discloses a method of forming a film after subjecting a mixture of polyester, calcium carbonate, and phosphorus compound to simple melt extrusion, Japanese Unexamined Patent Application Publication No. S63-66222 discloses a method of adding calcium carbonate and a phosphorus compound to a reaction system of polyester, and further Japanese Unexamined Patent Application Publication No. H07-316404 and Japanese Unexamined Patent Application Publication No. H07-331038 disclose a method of kneading a normal polyester, calcium carbonate, and a phosphorus compound. These methods have difficulty in effectively incorporating calcium carbonate into a polyester at a high level of concentration, or cause: insufficient particle dispersibility; foaming in the case of polymer remaining at a high temperature; generation of a foreign matter; the change of crystallinity of the obtained polyester composition; and a problem in poor stretched film-forming ability of a molded article such as a film; and the obtained film tends to have insufficient whiteness, concealment, and gloss." (paragraphs [0001] to [0005])

"[Problem to be solved by the Invention]

The object of the present invention is to obtain a film comprising a large amount of inorganic particles with excellent whiteness, concealment, mechanical properties, and gloss as well as heat resistance, moldability, and workability, and to solve the aforementioned previous defects by a polyester composition and a film comprising a large amount of inorganic particles with a specific concentration of terminal carboxyl group and thermal properties.

[Means for solving the problem]

The aforesaid object of the invention may be achieved by a biaxially-stretched white polyester film consisting of a polyester composition comprising 5% by weight or more of an inorganic particle, wherein a concentration of terminal carboxyl group of the polyester composition is 35 equivalent/10^6 g polyester or less, and a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) satisfies the following formula:

$$30 \leq Tcc - Tg \leq 60$$

" (paragraphs [0006] to [0008])

"The polyester composition of the present invention needs to comprise 5% by weight or more of inorganic particles. Preferable content of inorganic particles to obtain a molded article such as a film with excellent surface gloss, whiteness, and mechanical properties is 5 to 85% by weight, more preferably 7 to 80% by weight, further

preferably 10 to 80% by weight. If the content of inorganic particles in polyester is less than 5% by weight, the obtained molded article has poor whiteness.

Inorganic particles comprising polyester of the present invention are not particularly limited to, but may include, for example, metal carbonates, silicate compounds such as aluminum silicate and magnesium silicate, barium sulfate, zinc sulfide, titanium dioxide, silicon dioxide, or aluminum oxide. Among them, preferable is at least one inorganic particle selected from the group consisting of metal carbonates, silicate compounds, barium sulfate, and zinc sulfide, from a viewpoint of whiteness, concealment, and heat resistance. Calcium carbonate is preferable from a viewpoint of whiteness, concealment, and mechanical properties of an obtained molded article such as a film. Calcium carbonate may be either a natural product or a synthetic product, and the crystal form may be any of calcite, aragonite, and vaterite. Natural products are preferable from a viewpoint of whiteness and concealment of a film, and the crystal form is preferably calcite. Additionally, the other metal compounds including magnesium oxide, aluminum oxide, silicon dioxide etc. may be contained. Furthermore, inorganic particles other than calcium carbonate may be contained." (paragraphs [0010] to [0011])

"Polyester composition containing inorganic particles of the present invention needs to have a concentration of terminal carboxyl group of 35 equivalent/10^6 g polyester or less, preferably 30 equivalent/10^6 g polyester or less, more preferably 27 equivalent/10^6 g polyester or less, further preferably 25 equivalent/10^6 g polyester or less, particularly preferably 20 equivalent/10^6 g polyester or less from a viewpoint of particle dispersibility of inorganic particles in an obtained polyester composition, heat stability, and stretched film-forming ability in a melting process when forming into a film, etc. If the polyester composition containing inorganic particles has a concentration of terminal carboxyl group beyond 35 equivalent/10^6 g polyester, it causes poor particle dispersibility of inorganic particles as well as poor heat stability and stretched film-forming ability when forming into a film, etc.

A method of adjusting a concentration of terminal carboxyl group of the polyester composition containing inorganic particles of the present invention to 35 equivalent/10^6 g polyester or less is not limited to, but may include, for example, a method of kneading inorganic particles mixed and treated with a phosphorus compound and a polyester by use of an extruder, in particular a vent-type extruder, etc. in producing the aforementioned polyester composition containing inorganic particles, a method of changing a kneading condition such as temperature, time, and screw as

necessary or further using a polyester fine powder as a polyester." (paragraphs [0024] to [0025])

"Furthermore, from the viewpoint of the stretched film-forming ability in forming into, e.g., a film as well as whiteness, concealment, and mechanical properties of the resultant molded articles including film, the polyester composition comprising inorganic particles should satisfy the following formula with regard to the difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg):

$$30 \leq Tcc-Tg \leq 60$$

preferably, $32 \leq Tcc-Tg \leq 58$, more preferably, $33 \leq Tcc-Tg \leq 55$, and further preferably, $35 \leq Tcc-Tg \leq 53$. In the case where the difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) is less than 30, the polyester composition has high crystallinity and poor stretched film-forming ability in forming into, e.g., a film. On the other hand, if the difference exceeds 60, a resultant molded article such as a film may have poor whiteness, concealment, and mechanical properties, and thus is undesirable." (paragraph [0026])

"The polyester composition of the present invention has excellent particle dispersibility due to a low concentration of terminal carboxyl group and excellent melt heating stability when forming into a film, etc., and further excellent stretched film-forming ability when forming into a film, etc. due to specific thermal properties, and an obtained molded article such as a film has excellent whiteness, concealment, and mechanical properties." (paragraph [0032])

"[Examples]

Hereinafter, the present invention is further illustrated in details with examples. The properties in the examples were measured as follows.

...

E. Concentration of terminal carboxyl group of polyester composition

It was determined according to Maurice's method. To 50 ml of o-cresol/chloroform (weight ratio 7:3) there was dissolved 2 g of a polyester composition, and the resultant solution was titrated by N/20-NaOH methanol solution to measure a concentration of terminal carboxyl group, which was converted into a value of equivalent/10^6 g polyester.

F. Thermal properties of polyester composition

Diffraction scanning calorimetry (manufactured by Perkin Elmer, DSC-Type 4)

was used and heated at a temperature elevation rate of 16°C/min up to 300°C to melt. Subsequent to quenching, it was heated again up to 300°C to measure a glass transition temperature (Tg), a crystallization temperature on heating (Tcc), and a melting point (Tm).

...

Example 1

Calcite-type natural calcium carbonate powder with an average particle size of 1.1 μm and a specific surface area of 8.0 m^2/g was fed into a mixer with a fixed container named Super Mixer manufactured by Kawata, and temperature was elevated while stirring at a rotation speed of rotary blade of 760 rpm, and at a time point when an inner can temperature reached 40°C, there was added by spraying a phosphorus compound of trimethyl phosphate so that trimethyl phosphate might amount to 5% by weight on a calcium carbonate basis. Thereafter, it was mixed for 10 minutes and subjected to a surface treatment. The amount of elemental phosphorus of the resultant calcium carbonate was measured by colorimeter method and found to be 8,300 ppm.

After mixing 15 weight parts of calcium carbonate that had undergone a surface treatment with 85 weight parts of polyethylene terephthalate fine powder having an intrinsic viscosity of 0.65 dl/g and a particle size of 35 mesh or less (a particle size passing through a JIS Z8801 standard wire sieve with a sieve opening of 0.42 mm) in terms of JIS standard sieve, wherein the polyethylene terephthalate is a copolymer of 3 mol% of isophthalic acid and 2 mol% of diethylene glycol, a mixture was supplied to a vent-type biaxial extruder by use of a feeder, and holding a vent port at a vacuum of 10 torr, and kneading at 285°C for a residual time of one minute to obtain a polyester composition comprising 15% by weight of calcium carbonate. No foreign matter was found in kneading and no foaming was observed. Further, the concentration of terminal carboxyl group of the obtained composition was 24 equivalent/10^6 g polyester, and the particle dispersibility of calcium carbonate into an obtained composition was good. As a result of measuring thermal properties of the polyester composition, a melting point (Tm) was 250°C, a glass transition temperature (Tg) was 78°C, a crystallization temperature on heating (Tcc) was 130°C, and a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) was 52. Further, the amount of elemental phosphorus in a composition was measured by the colorimeter method and found to be 350 ppm. The polyester composition was subjected to a melt heating treatment at 300°C for eight hours under a nitrogen atmosphere. The measurement of heat resistance showed no foaming in a process of the melt heating

treatment, nor was discoloration observed, and the composition had excellent heat resistance.

On the other hand, the obtained polyester composition containing calcium carbonate was sufficiently dried, and then melted at 285°C by feeding to an extruder, and extruded into a sheet via a T-shaped die, and cooled and solidified in a cooling drum at 30°C to obtain an unstretched film. Subsequently, the unstretched film was heated to 95°C and stretched by 3.3 times in a machine direction and further heated to 100°C and stretched to by 3.3 times in a traverse direction, and heated to 200°C and subjected to stretched film formation for one hour to obtain a film with a thickness of 75 μm. No film breakage occurred during one hour stretching film formation. The properties of the resultant film are shown in Table 3.

The density was 1.25 g/cm^3 and the composition had excellent whiteness, concealment, gloss, and Young's modulus.

Comparative Example 1

Other than that calcium carbonate used had not undergone a surface treatment with a phosphorus compound, and a polyester used was in a form of a polyester chip (longitudinal: 4 mm, traverse: 4 mm, thickness: 3 mm shape), a polyester composition containing calcium carbonate and a film using the composition were obtained in a similar manner to Example 1. Tables 1, 2, and 3 show results of measurement of various properties.

In producing a polyester composition containing calcium carbonate with a vent-type biaxial extruder, a polymer generated foaming, and the resultant composition had a concentration of terminal carboxyl group of 50 equivalent/10^6 g polyester and poor particle dispersibility of calcium carbonate in the composition. Further, as a result of measuring thermal properties of the polyester composition, a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) was 49. Further, the polyester composition was subjected to a melt heating treatment at 300°C for eight hours under a nitrogen atmosphere. The heat resistance test showed foaming in a melt heating treatment, discoloration was observed, and poor heat resistance. Bubbles were observed in a film due to foaming in a melt film formation of the polyester composition, and foreign matter was observed, and further film breakage frequently occurred, thus failing to obtain a satisfiable film. The obtained film had poor whiteness and concealment.

Examples 2 to 7

Except that kinds and amounts of inorganic particles, kinds and amounts of

phosphorus compound and kind of polyester were changed, a polyester composition containing inorganic particles having a concentration of terminal carboxyl group in a range of the present invention and thermal properties was obtained in a similar manner to Example 1, and subsequently a film was obtained by use of the composition. Tables 1, 2, and 3 show results of various properties.

No polymer foaming or foreign matter generation was observed in producing a polyester composition containing inorganic particles with a vent-type biaxial extruder, and the particulate dispersibility of the inorganic particles was good. The polyester composition was subjected to a melt heating treatment at 300°C for eight hours under a nitrogen atmosphere. The heat resistance test showed no foaming in a melt heating treatment, nor was discoloration observed, and the composition had excellent heat resistance. Further, the stretched film-forming ability of a film using the polyester composition was good, and the obtained film properties were also excellent.

Comparative Example 2

Except that the kneading temperature and the time were changed when kneading calcium carbonate that has subjected to a surface treatment with a phosphorus compound and a polyester in a vent-type biaxial extruder, a polyester composition containing calcium carbonate having a concentration of terminal carboxyl group of 40 equivalent/10^6 g polyester was obtained in a similar manner to Example 1, and subsequently a film was obtained using the polyester composition.

Tables 1, 2, and 3 show results of measuring various properties.

The aggregated particles of calcium carbonate particles were observed in a polyester composition. Further, the polyester composition was subjected to a melt heating treatment at 300°C for eight hours under a nitrogen atmosphere. The heat resistance test showed slight foaming in a melt heating treatment, and discoloration was observed, and poor heat resistance. Further, foaming was observed in some cases when forming into a film using the polyester composition, film breakage occurred, and the composition had poor film-forming ability and the obtained film had a slightly poor property in, e.g., whiteness.

Comparative Example 3

Except that the kind of polyester was changed, a polyester composition containing inorganic particles and a film using the composition were obtained in a similar manner to Example 1. Tables 1, 2, and 3 show results of measuring various properties.

The obtained polyester composition had a concentration of terminal carboxyl

group of 25 equivalent/10^6 g polyester, and as a result of measurement of thermal properties, a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) was 62. Particulate dispersibility was good in a polyester composition, but when a film was formed by a melt film formation with the polyester composition, film breakage occurred in a process of stretched film formation in some cases, and the obtained film had poor properties.

[Table 1]

表1

	無機粒子			リン化合物		ポリエステル		
	種類	平均粒子径（μm）	量（重量部）	種類	量（重量%対無機粒子）	共重合成分	種類	量（重量部）
実施例1	炭酸カルシウム	1．1	15	TMPA	5．0	IPA /DEG 3モル%/2モル%	35メッシュ以下微粉末	85
2	〃	〃	15	TMPA	5．0	IPA /DEG 5モル%/2モル%	35メッシュ以下微粉末	85
3	〃	1．1	30	TMPA	5．0	IPA /DEG 5モル%/2モル%	35メッシュ以下微粉末	70
4	〃	2．0	60	TMPA	2．0	DEG 2モル%	35メッシュ以下微粉末	40
5	〃	1．1	30	MMPA	1．0	DEG 2モル%	14メッシュ以下微粉末	70
6	硫酸バリウム	0．5	15	TMPA	1．0	DEG 5モル%	35メッシュ以下微粉末	85
7	硫化亜鉛	0．4	15	TMPA	1．0	DEG 5モル%	35メッシュ以下微粉末	85
比較例1	炭酸カルシウム	1．1	15	−	−	IPA /DEG 3モル%/2モル%	ポリエステルチップ	85
2	〃	1．1	15	TMPA	5．0	IPA/DEG 3モル%/2モル%	35メッシュ以下微粉末	85
3	〃	1．1	15	TMPA	5．0	IPA/DEG 12モル%/2モル%	35メッシュ以下微粉末	85

実施例　Example
比較例　Comparative Example

無機粒子　Inorganic particle
リン化合物　Phosphorus compound
ポリエステル　Polyester

種類　Kinds
平均粒子径　Average particle size
量（重量部）　Amount (Percent by weight)
量（重量%対無機粒子）　Amount (percent by weight on an inorganic particle basis)
共重合成分　Copolymeric component

炭酸カルシウム　Calcium carbonate
硫酸バリウム　Barium sulfate
硫化亜鉛　Zinc sulfide
モル%　mol %
以下微粉末　Hereinafter fine powder
ポリエステルチップ　Polyester chip

リン酸トリメチル　TMPA: Trimethyl phosphate

リン酸モノメチル　MMPA: Monomethyl phosphate

イソフタル酸　IPA: Isophthalic acid

ジエチレングリコール　DEG: diethyleneglycol

[Table 2]

表 2

	無機粒子含有ポリエステル組成物の特性						
	粒子分散性	リン元素含有量 (ppm)	カルボキシル末端基濃度 (当量/10⁶g)	Tg (℃)	Tcc (℃)	Tcc−Tg	Tm (℃)
実施例1	○	350	24	78	130	52	250
2	○	350	32	77	132	55	246
3	○	1080	18	76	113	37	247
4	○	550	14	76	111	35	254
5	○	450	22	76	117	41	254
6	○	100	30	79	132	53	251
7	○	150	28	80	131	51	251
比較例1	×	−	50	80	129	49	250
2	△	350	40	77	129	52	250
3	○	350	25	76	140	62	227

無機粒子含有ポリエステル組成物の特性　The properties of polyester composition containing inorganic particles

粒子分散性　Particle dispersibility
リン元素含有量　　Content of elemental phosphorus
カルボキシル末端基濃度（当量／１０^{6}ｇ）　Concentration of terminal carboxyl group (equivalent/10^6 g)

実施例　　Example
比較例　　Comparative Example

[Table 3]

表３

	フィルム特性				
	密度 (g/cm^3)	白度 (%)	O・D	光沢度 (%)	ヤング率 (GPa)
実施例１	１．２５	８３	０．８	２３	３．５５
２	１．３０	８０	０．７	２３	３．３３
３	１．０５	８５	１．０	１８	３．１４
４	１．０２	８８	１．５	７	２．９４
５	１．０７	８０	１．０	１５	３．１４
６	１．３８	８２	０．８	５０	３．６２
７	１．４０	７９	１．２	５５	３．５５
比較例１	１．４１	５８	０．３	≦５	２．８４
２	１．３０	７１	０．５	１５	２．９４
３	１．４０	５９	０．４	１０	２．１５

フィルム特性　　Film properties
密度　Density
白度　Whiteness
光沢度　　Gloss level
ヤング率　　Young's modulus
実施例　　Example
比較例　　Comparative Example

(paragraphs [0041] to [0072])

"[Effects of the Invention]

As aforementioned, the present invention is a polyester composition containing a large amount of inorganic particles and having specific concentration of terminal carboxyl group and thermal properties, as well as a molded article such as a film consisting thereof, wherein the polyester composition has good dispersibility of the inorganic particles, and further excellent melt heating stability and stretched film-forming ability when formed into a film, etc., and an obtained molded article such as a film has excellent properties such as whiteness, concealment, and mechanical properties. Molded articles such as the film may be suitably used for a substrate such as photographic paper, an X-ray screen, receiver paper, a magnetic recording card, a label, a delivery ticket for home-delivery service, etc., display boards and white boards." (paragraph [0073])

(2) Problems and technical significance of the corrected invention

From the above point (1), the following are generally recognized regarding the corrected invention.

A The corrected invention has an objective (a problem to be solved) to obtain a biaxially-stretched white polyester film containing a large amount of inorganic particles and having excellent whiteness, concealment, mechanical properties, and gloss as well as heat resistance, moldability, and workability. A biaxially-stretched white polyester film consisting of a polyester composition comprising a large amount (specifically, 5% by weight or more) of inorganic particles and having specific concentration of terminal carboxyl group and thermal properties (Specifically, a concentration of terminal carboxyl group of the polyester composition is 35 equivalent/10^6 g polyester or less, and a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg) satisfies the relationship of $30 \leq Tcc-Tg \leq 60$) provides advantageous effects of good dispersibility of the inorganic particles in the polyester composition, further excellent melt heating stability and stretched film-forming ability when formed into a film, etc., and an obtained molded article such as a film having excellent properties such as whiteness, concealment, and mechanical properties.

B Further, the corrected invention specifies a lower limit of an amount of inorganic particles contained in a polyester composition as "5% by weight or more"

(hereinafter referred to as "constituent component (a)"). The corrected specification describes the technical significance of such matters for specifying the invention "If the content of inorganic particles in polyester is less than 5% by weight, the obtained molded article has poor whiteness." (paragraph [0010]). Further, the corrected specification specifically also discloses in the examples one comprising 15 to 60% by weight.

C Further, regarding the concentration of terminal carboxyl group of polyester composition, the corrected invention specifies its upper limit as "35 equivalent/10^6 g polyester or less" (hereinafter referred to as "constituent component (b)"), whereas the corrected specification describes the technical significance of "If the polyester composition containing inorganic particles has a concentration of terminal carboxyl group beyond 35 equivalent/106 g polyester, it causes poor particle dispersibility of inorganic particles, heat stability, or stretched film-forming ability when forming into a film etc." (paragraph [0024]). Further, the corrected specification also specifically discloses in the examples one comprising 14 to 32 equivalent.

D Furthermore, regarding a difference between a crystallization temperature on heating (Tcc) and a glass transition temperature (Tg), the corrected invention specifies it as "satisfying the relationship of $30 \leq Tcc-Tg \leq 60$" (hereinafter referred to as "constituent element (c)"), whereas the corrected specification discloses the technical significance of such matter for specifying the invention "If the difference is less than 30, the polyester composition has high crystallinity and poor stretched film-forming ability in forming into, e.g., a film. On the other hand, if the difference exceeds 60, a resultant molded article such as a film may have poor whiteness, concealment, and mechanical properties, and thus is undesirable." (paragraph [0026]). Further, the corrected specification specifically also discloses in the examples one having a difference of 35 to 55.

(3) Supporting requirement to be applied to the corrected invention

The determination of whether or not the recitation of the Claims might comply with the support requirement should follow the steps of: comparing the recitation of the Claims and the descriptions of the Detailed Description of the invention; and considering whether or not the invention recited in the Claims might fall within the scope in which a person skilled in the art could recognize that a problem to be solved by the invention might be solved by the description of the Detailed Description of the Invention, or considering whether or not the invention recited in the Claims might fall within the scope in which a person skilled in the art could recognize that the problem to

be solved by the invention might be solved without such description or suggestion in view of common technical knowledge as of the filing.

(4) Existence or nonexistence of sufficiency of supporting requirement according to the corrected invention

When it comes to the corrected invention, it can be seen from the description of the corrected specification that, as discussed in the above item (2), the sufficiency of the constituent component (a) in a biaxially-stretched white polyester film consisting of polyester composition results in a film with excellent whiteness, and the sufficiency of the constituent component (b) results in the improved particulate dispersibility of inorganic particles and improved heat stability and stretched film-forming ability in a melting process when formed into a film, and the sufficiency of the constituent component (c) may improve stretched-film forming ability when formed into a film and improve whiteness, concealment, and mechanical properties of the obtained film.

Consequently, summarizing them, it can be said that a person skilled in the art could recognize that a problem to obtain a biaxially-stretched white polyester film with excellent whiteness, concealment, mechanical properties, and gloss as well as heat resistance and moldability and workability might be solved by the sufficiency of the constituent components (a) to (c).

Therefore, it can be said that the scope of the claims according to the corrected invention falls within a range that a person skilled in the art could recognize that a problem of the corrected invention could be solved, and thus complies with a support requirement.

(5) Demandant's allegation

A Demandant argues that the example of the corrected specification: (1) only describes a biaxially-stretched white polyester film using calcium carbonate that has undergone a surface treatment with trimethyl phosphate (TMPA), barium sulfate that has undergone a surface treatment with TMPA, or zinc sulfide that has undergone a surface treatment with TMPA, (2) only uses a copolymeric polyethylene terephthalate fine powder having a particle size of 35 mesh or less as a polyester, and the corrected invention is limited to these examples in view of the common technical knowledge as of the filing of the Patent.

In view of the common technical knowledge as of the filing, however, there is no reason to construe the scope of the corrected invention as being limited to only the

invention shown in the examples of the corrected specification. The corrected specification discloses that a surface treatment with phosphorus compound or a copolymeric polyethylene terephthalate fine powder is preferable. It does not disclose that the other ones cannot achieve the goal of the corrected invention. Furthermore, while the examples used a specific inorganic particle that had undergone a surface treatment with the above phosphorus compound or a copolymeric polyethylene terephthalate fine powder, it cannot be directly concluded that the matter is an essential matter for the corrected invention.

Demandant's argument is groundless and totally unreasonable.

B Demandant relied on the description of comparative example 1 of A-1 and comparative example 3 of A-4 and argued that when calcium carbonate, barium sulfate, or zinc sulfide is used without surface treatment with trimethyl phosphate, it is highly likely that the corrected invention cannot achieve a desired whiteness, concealment, and gloss, and thus the corrected invention may encompass an embodiment that is not described in the Detailed Description of the Invention.

First of all, it is indefinite, however, as to whether Comparative Example 1 of A-1 and Comparative Example 3 of A-4 on which the demandant relied might satisfy the constituent components (b) and (c).

Demandant's argument is groundless and totally unreasonable.

(6) Summary

As described above, the demandant's allegation of reason for invalidation 3 is groundless.

8 Reason for invalidation 4

(1) Regarding the enablement requirement to be applied to the corrected invention, Article 36(4) of the Patent Act specifies that the Detailed Description of the Invention should "... disclose definitely and sufficiently to the extent that a person skilled in the art could have implemented the invention."

Further, an implementation of an invention in a product invention includes an action of production, use, etc. of the product (Article 2(3)(i) of the Patent Act). Therefore, regarding the product invention, it can be said as conforming to the enablement requirement if there is a specific disclosure in the specification showing that the product can be manufactured and used, or without such description, if a person

skilled in the art could make or use the product on the basis of the description of the specification and drawings as well as the common general knowledge as of the filing.

(2) Existence or nonexistence of the enablement requirement according to the corrected invention

A When it comes to the corrected invention, the corrected inventions are product inventions, and it can be seen from the corrected specification that, as discussed in the above item 7(2), a conventionally used biaxially-stretched white polyester film did not solve the problem of whiteness, concealment, mechanical properties, gloss, heat resistance, moldability, and workability simultaneously. A person skilled in the art who read the description of the corrected specification could understand that the sufficiency of the constituent component (a) in a biaxially-stretched white polyester film consisting of polyester composition results in a film with excellent whiteness, and the sufficiency of the constituent component (b) results in improved particulate dispersibility of inorganic particles and the improved heat stability and stretched film-forming ability in a melting process when formed into a film, and the sufficiency of the constituent component (c) may improve stretched-film forming ability when formed into a film and improve whiteness, concealment, and mechanical properties of the obtained film.

Consequently, the technical significance of the matters for specifying the invention (a) to (c) specified by the corrected invention may be understood. A person skilled in the art could understand the technical significance of the combination of these matters for specifying the invention.

Therefore, it can be said that the corrected specification describes the matters necessary for a person skilled in the art to understand the technical significance of the corrected invention.

B Further, in order to recognize the corrected invention as feasible, it is necessary that there is a specific disclosure in the Detailed Description of the Invention of the corrected specification of a method for producing an embodiment of the corrected invention, or without such description, a person skilled in the art could produce an embodiment of the corrected invention in view of the common technical knowledge. The corrected specification specifically discloses in the examples the matters (a) to (c) for specifying the invention and the combination thereof. It can be said that a person skilled in the art could control each of these matters for specifying the invention to each specified numerical range for production without any particular difficulty.

Therefore, it can be said that the corrected invention is described to the extent

that allows a person skilled in the art to easily implement the corrected invention, and thus conform to the enablement requirement.

(3) Demandant's allegation

A As in the case of the above 7(5)A., Demandant argues that the example of the corrected specification: (1) only describes a biaxially-stretched white polyester film using calcium carbonate that has undergone a surface treatment with trimethyl phosphate (TMPA), barium sulfate that has undergone a surface treatment with TMPA, or zinc sulfide that has undergone a surface treatment with TMPA, (2) only uses a copolymeric polyethylene terephthalate fine powder having a particle size of 35 mesh or less as a polyester, and it must be said that it is highly possible in view of the common technical knowledge as of the filing of the Patent that the corrected invention cannot achieve a desired whiteness, concealment, and gloss if the other polyester is used, and thus the description of the corrected specification fails to describe to the extent that allows a person skilled in the art to implement the corrected invention.

However, the above argument is not acceptable.

Specifically, as discussed in the above 7(5)A., even in view of the common technical knowledge as of the filing, there is no reason to construe the scope of the corrected invention as being limited to only the invention shown in the examples of the corrected specification. There is no specific evidence showing that a film according to the corrected invention may not be produced (implemented) when any other components or fine powders are used in place of each of the above components or fine powders used in the example. Thus the Demandant's allegation above is groundless.

B Demandant relied on the description of the comparative example 1 of A-1 and the comparative example 3 of A-4 and argued that when calcium carbonate, barium sulfate, or zinc sulfide is used without surface treatment with trimethyl phosphate, it must be said as highly likely that the corrected invention cannot achieve a desired whiteness, concealment, and gloss, and thus the corrected specification fails to describe to the extent that allows a person skilled in the art to implement the corrected invention, as in the case of the above 7(5)B.

However, the above argument is not acceptable.

Specifically, as discussed in the above item 7(5)B., first of all, it is indefinite as to whether Comparative Example 1 of A-1 the Comparative Example 3 of A-4 on which demandant relied might satisfy the constituent components (b) and (c), and thus the

Demandant's argument above is groundless.

(4) Summary

As described above, the reason for invalidation 4 according to the Demandant's argument is not reasonable.

9 Invalidation Reason 5

(1) The demandant's allegation

Demandant argues that it can be seen from the description of "Further, a film of the present invention may be a composite film consisting of a layer made of a polyester composition of the present invention and the other polyester layer." (paragraph [0039]) of the corrected specification that a biaxially-stretched white polyester film of the corrected invention may be a composite film, but the corrected invention 1 does not specify a composite film consisting of a layer made of a polyester composition of the corrected invention and the other polyester layer, and thus, if the corrected invention 1 comprises a composite film, it means that the corrected invention 1 does not definitely specify the invention for which a patent is sought.

(2) Consideration of definiteness requirement

Regarding the definiteness requirement of the invention, it is sufficient to consider whether the recitation of the Claims might be definite, and the description of the corrected specification has no direct relationship with this.

Further, the description of the corrected invention 1 is as recited in No. 3, and there is no indefinite description.

Further, the above description of the paragraph [0039] definitely means that a biaxially-stretched white polyester film according to Claim 1 may be formed into a composite film by laminating the other polyester layer. Thus such description does not make the recitation of Claim 1 indefinite.

(3) Summary

As described above, the reason for invalidation 5 according to the Demandant's argument is not reasonable.

No. 7 Closing

For the above reasons, none of the arguments about the invalidation has a point, and thus the demand should be rejected.

The costs in connection with the trial shall be borne by Demandant under the provisions of Article 61 of the Code of Civil Procedure as applied mutatis mutandis to the provision Article 169(2) of the Patent Act.

Therefore, the trial decision shall be made as described in the conclusion.

April 7, 2015

Chief administrative judge: SUTO, Yasuhiro
Administrative judge: ONODERA, Tsutomu
Administrative judge: OSHIMA, Shogo