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D E C I S I O N
of 13 October 2004

Case Number: T 0251/01 - 3.3.7

Application Number: 92304269.1

Publication Number: 0514137

IPC: B32B 27/12

Language of the proceedings: EN

Title of invention:
Degradable laminate composition

Patentee:
MITSUI CHEMICALS, INC.

Opponent:
Cargill Dow Polymers L.L.C.

Headword:
-

Relevant legal provisions:
EPC Art. 54, 111, 123

Keyword:
"Amendments - allowable (yes)"
"Novelty (yes)"
"Remittal (yes)"

Decisions cited:
-

Catchword:
-



Case Number: T 0251/01 - 3.3.7

D E C I S I O N
of the Technical Board of Appeal 3.3.7
of 13 October 2004

Appellant: MITSUI CHEMICALS, INC.
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 21 December 2000
revoking European patent No. 0514137 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: R. E. Teschemacher
Members: B. J. M. Struif
P. A. Gryczka

Summary of Facts and Submissions

- I. The mention of the grant of European patent No. 0 514 137 with respect to European patent application No. 92 304 269.1 filed on 12 May 1992 was published on 18 March 1998. The granted patent was based on four claims, claim 1 being the only independent claim and reading as follows:

"A degradable laminate comprising a surface layer of a thermoplastic, degradable polymer having an average molecular weight of from 10,000 to 1,000,000 comprising polylactic acid, a copolymer of lactic acid and a different hydroxycarboxylic acid or a mixture of polylactic acid with a polymer of a different hydroxycarboxylic acid or with a copolymer of lactic acid and a different hydroxycarboxylic acid, laminated to the surface of a regenerated cellulose film, paper, leather, or cloth."

- II. A notice of opposition was filed against the granted patent, in which the revocation of the patent in its entirety was requested on the grounds of Article 100(a) EPC with respect to lack of novelty and lack of an inventive step. The opposition was supported *inter alia* by the following documents:

D1: US-A-4 045 418

D2: Encyclopedia of Polymer Science and Engineering, vol. 8, pages 623 to 627, A Wiley-Interscience Publication, John Wiley and Sons, 1987

III. In a decision posted 21 December 2000, the opposition division revoked the patent. That decision was based on granted claims 1 to 4 as the sole request.

The opposition division held that:

The claimed subject-matter was not novel over D1, which disclosed a degradable laminate composed of a layer of lactic acid copolymer on a layer of cellulose. Since D1 referred to an impregnation process for the preparation of a laminate and since according to examples 12 and 15 of the patent in suit the claimed laminates could also be prepared by impregnation, no difference could be seen.

IV. On 26 February 2001 the proprietor (appellant) filed a notice of appeal against the above decision, the prescribed fee being paid on the same day. In the statement setting out the grounds of appeal filed on 27 April 2001, the appellant argued that that the granted claims were novel over D1.

V. By letter of 13 September 2004 in reply to a communication of the board, the appellant submitted six sets of claims 1 to 4 as auxiliary requests 1 to 6.

VI. Oral proceedings were held on 13 October 2004 in the absence of the opponent (respondent) who had informed the board by letter of 8 October 2004 that he would not be attending the oral proceedings. The proceedings were continued in the absence of the respondent in accordance with Rule 71(2) EPC. During the oral proceedings the appellant submitted an amended set of

claims 1 to 4 as new main request replacing the previous main request.

Amended claim 1 of the main request differed from granted claim 1 in the following respect:

- Addition of the feature "in the form of a film" after the term "surface layer".

VII. The appellant argued in substance as follows:

- (a) The amendment to claim 1 of the new main request was based on all examples and met the requirements of Article 123(2) EPC.
- (b) As to novelty, the amended claim referred to "a surface layer in the form of a film of ... a polymer ... laminated to the surface of a regenerated cellulose film, paper, leather or cloth". Thus, it was apparent from claim 1 that the laminate comprised a surface polymer film having a finite thickness which was attached to the surface of a specific substrate. According to D1 lactic acid copolymers find utility in the manufacture of films, moldings and laminates by conventional fabricating methods. Having regard to the fabrication method for a laminate, D1 provided its own teaching, in particular with respect to reinforced laminates, which were produced by flowing molten polymer through the fibrous material. The impregnation according to D1 did not necessarily result in the presence of a surface film, laminated to the surface of specific substrates.

- (c) D2 provided a general disclosure of a laminating process which could also be carried out by coating. There was however no indication in D1 that fibrous mats or sheets should be treated by coating and inevitably and unambiguously resulted in a laminate comprising a surface polymer film.

Even if the coating step according to the patent in suit might lead to some impregnation into the surface of the substrate, it had to provide a surface polymer film as now specified in claim 1. Example 12 of the patent in suit did not relate to any impregnation and in example 15 a separately prepared film of poly-L-lactic acid was applied and pressed onto the surface of a non-woven material.

As the decision under appeal had only dealt with the question of novelty, the case should be remitted to the opposition division so that inventive step could be considered by two instances.

- VIII. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request submitted during the oral proceedings, or auxiliarily on the basis of one of the six auxiliary requests filed with letter dated 13 September 2004. In addition, it was requested that the case be remitted to the department of first instance if the board accepted novelty.

IX. The respondent (opponent) has abstained in the appeal proceedings from commenting or submitting a request.

Reasons for the Decision

1. The appeal is admissible.

Amendments

Main request

2. The amendment in claim 1 of the main request refers to the feature "in the form of a film" which specifies the surface layer of the claimed laminate. That feature is based on all examples of the originally filed documents. As illustrated in example 1, after completion of the laminate the adhesion between cellophane and the "polymer film" and thereafter degradability in soil have been tested, wherein "the polymer film on the surface" is deteriorated. Thus, example 1 explicitly refers to a polymer film in the final laminate. Similar formulations can be found in all other examples. Even in examples 6 and 12, wherein the surface layer is coated from a solution of the polymer, reference is made to a "polymer film" and "the film on the surface" in the final laminate.

2.1 Thus, all exemplified embodiments of the application as filed expressly refer to a surface layer in the form of a film in the final structure of the laminate as an essential feature for defining the invention.

- 2.2 From the above it follows that the amendment can be directly and unambiguously derived from the application as filed. Consequently, the amendment meets the requirements according to Article 123(2) EPC.
3. Since the amendment more precisely defines the nature of the surface layer as a polymer film, it may contribute to overcome a novelty objection (Rule 57a EPC).

Novelty

4. D1 discloses a thermally stable copolymer of an optically inactive lactide and epsilon caprolactone, said copolymer being obtained by heating a mixture of L,L-lactide having a melting point above 100°C and epsilon caprolactone at a temperature above the melting point of D,L-lactide and below 200°C in the presence of a catalyst, said mixture comprising about 60 to about 95 per cent by weight of D,L-lactide (claim 1). The copolymer has a weight-average molecular weight of 100,000 to 300,000 and can be readily fabricated into highly useful films, fibers and structural shapes having desirable properties (column 2, lines 49 to 54). The copolymers produced in accordance with D1 depending upon the D,L-lactide/epsilon caprolactone ratio, find utility in the manufacture of films, fibers, moldings and laminates which are prepared by conventional fabricating methods (column 6, lines 35 to 38).
- 4.1 Copolymers prepared according to D1 can be used in producing reinforced laminates according to known procedures. In general, laminates are made from a fibrous mat or by assembling a multiplicity of sheets

of material to form a matrix which is consolidated into a unitary structure by flowing molten polymer through the fibrous material and curing it while in a mold or hydraulic press to form the polymer. Fibers which are used in forming the matrix include natural and synthetic fibers such as cellulose derived from wood, cotton, linen, hemp, and the like, asbestos, glass, nylon, cellulose acetate and the like (column 8, lines 1 to 13).

4.2 There is no dispute that D1 discloses a laminate which comprises a degradable copolymer of L-lactic acid and epsilon caprolactone falling within the definition of claim 1 according to the patent in suit. Furthermore, in D1 a fibrous mat is used which may include natural and synthetic fibres such as cellulose fibers or nylons. According to the patent in suit, a cloth can be used as substrate and may be a nonwoven fabric made of polyamino acid fibres described in example 15.

4.3 However, D1 does not explicitly mention any surface layer in the form of a film of said copolymer laminated to the surface of said specific substrate. Thus, the remaining question to be answered is whether or not such surface polymer film will be formed as an inevitable result on the fibrous mat as matrix, when following the process disclosed in D1, namely by flowing the molten polymer through the fibrous material and curing it while in a mold or a hydraulic press to form the polymer.

4.4 In that respect D1 gives only a general teaching (see point 4.1) but does not give a specific example in which all necessary details of starting materials and

process conditions are mentioned. According to D1 the molten polymer is flowed through the fibrous material which teaching implies an impregnation process rather than a coating process. Since according to the process of D1 the laminate is consolidated into a unitary structure, the polymer will be uniformly distributed within the whole matrix. Even if some molten polymer may be left on the surface of the fibres it cannot be derived therefrom that a surface polymer film laminated on the surface of the mat is obtained as an inevitable result of that impregnation process. In addition, there is no evidence on file for such an argument.

4.5 D1 also refers to conventional fabrication methods to produce laminates from the copolymers (column 6, lines 35 to 40). According to D2, which is a document reflecting the general knowledge in the field of laminates, conventional laminating processes with a resin solution may include impregnation or coating (page 627, below "manufacture"). However, it has not been shown that any coating procedure of D2 which is applied to any fibrous matrix mat of D1 will inevitably result in a surface polymer film as now claimed.

4.6 According to the decision under appeal, since the patent in suit referred to a process including a solution coating as shown by examples 12 and 15, the claimed laminates could also be obtained by a process which comprised impregnation.

4.6.1 In example 12 of the patent in suit, a wood free paper is used as substrate onto which a polymer solution is applied and dried so that a polymer layer is formed on the surface of the paper. Thus, that example does not make reference to any impregnation process. In example 15 of the patent in suit polyamino acid fibers having a thickness of 50 μm are passed through a 15% chloroform solution of poly-L-lactic acid having a molecular weight of 110,000 to adhere poly-L-lactic acid to the surface of the fiber. After drying, the treated fibers are lengthwise and crosswise combined and hot pressed to obtain a nonwoven fabric. In a further step, a film which is prepared from poly-L-lactic acid, having a weight average molecular weight of 150,000, and has a thickness of 30 μm is applied to the above-obtained nonwoven fabric and pressed overnight at room temperature and under a pressure of 5 kg/cm^2 . Thus, in the first step a non-woven fabric is produced which is used as starting substrate of the claimed laminate and in a different second step a separately prepared polymer film is applied to the surface of the fabric. Consequently, the patent in suit does not make use of any impregnation process to prepare the claimed laminate structure.

4.7 From the above it follows that the claimed subject-matter is not inevitably obtained when following the explicit disclosure of D1, even if general technical knowledge as described in D2 is taken into consideration. Thus, novelty cannot be denied by said documents.

4.8 As no other documents have been cited in the decision under appeal against novelty and since the board, when

considering the other cited prior art, sees no reason to take a different view, the claimed subject-matter is novel (Article 54(2) EPC).

5. Since the decision under appeal has only dealt with novelty but not with inventive step and since the appellant requested that the case be remitted to the first instance, if the board accepted novelty, the board within its discretion finds it appropriate to remit the case to the first instance (Article 111(1) EPC, second sentence).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution on the basis of the main request as submitted during the oral proceedings.

The Registrar:

The Chairman:

C. Eickhoff

R. Teschemacher