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Datasheet for the decision of 18 May 2021

Case Number: T 0059/18 - 3.3.06

Application Number: 07706741.1

Publication Number: 1985444

IPC: B32B27/34, B32B27/28, B65D65/40

Language of the proceedings: EN

Title of invention:
Heat shrinkable multilayer film and packaging material using same

Patent Proprietor:
Kureha Corporation

Opponents:
Cryovac, Inc.
isarpatent - Patentanwälte Behnisch Barth Charles Hassa Peckmann und Partner mbB

Headword:
Relaxation ratio / KUREHA

Relevant legal provisions:
EPC Art. 83

Keyword:
Sufficiency of disclosure - (no) - result to be achieved - parameter definition not belonging to common general knwoledge

Decisions cited:
T 0063/06, T 0412/09, T 0593/09, T 2403/11

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

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Case Number: T 0059/18 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 18 May 2021

Appellant: (Patent Proprietor)	Kureha Corporation 3-3-2, Nihonbashi-Hamacho, Chuo-ku Tokyo 103-8552 (JP)
Representative:	Hoffmann Eitle Patent- und Rechtsanwälte PartmbB Arabellastraße 30 81925 München (DE)
Respondent: (Opponent 1)	Cryovac, Inc. 100 Rogers Bridge Road Duncan, SC 29334 (US)
Representative:	Uexküll & Stolberg Partnerschaft von Patent- und Rechtsanwälten mbB Beselerstraße 4 22607 Hamburg (DE)
Respondent: (Opponent 2)	isarpatent - Patentanwälte Behnisch Barth Charles Hassa Peckmann und Partner mbB Friedrichstrasse 31 80801 München (DE)
Representative:	Isarpatent Patent- und Rechtsanwälte Behnisch Barth Charles Hassa Peckmann & Partner mbB Friedrichstrasse 31 80801 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 27 October 2017 revoking European patent No. 1985444 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	P. Ammendola
Members:	L. Li Voti
	C. Heath

Summary of Facts and Submissions

I. The patent proprietor's appeal lies from the decision of the opposition division to revoke European patent no. 1 985 444 because of lack of sufficient disclosure.

II. With its statement of grounds the appellant maintained that the claimed invention was sufficiently disclosed and cited inter alia the following documents in support of its arguments:

D24: EP 1 892 092 A1, published 27.02.2008
D25: "Influence of Annealing Conditions on Shrinkage behaviors of Double Bubble Tubular Film of Ethylene Random Copolypropylene" by S. Kunio et al., Seikei-Kakou Vol. 21 No. 6, 2009, pages 337-345
D25a: partial English translation of D25
D26: EP 0 361 758 A2
D27: WO 01/70483 A1.

III. With their replies to the statement of grounds the respondents (opponents 1 and 2) raised/maintained objections under Articles 83, 54, 56 and 123(2) EPC and filed documents D28-D37, in particular:

D31: D.W. Van Krevelen "Properties of Polymers", Third completely revised edition, 1990, pages 394-396
D32: F.W. Billmeyer, Jr. "Textbook of Polymer Science", Third edition, 1984, pages 312, 313, 318, 319
D33: P.C. Powell "Engineering with Polymers", 1983, reprinted 1988, pages 69-74, 91-94, 100, 234, 316-317
D34: H.-G. Elias "An Introduction to Plastics", Second, Completely revised Edition, 2003, pages 107-111, 198-199, 383, 385

D35: L. Mascia "Thermoplastics: Materials Engineering" Second edition, 1989, pages 120-125, 149, 151-153, 166, 534, 536
D36: US 3,076,232.

IV. The appellant filed with its following letters inter alia documents D38-D43, in particular:

D38: US 6,565,985 B2
D39: US 4,436,888
D40: US 2009/0127741 A1, published 21.05.2009, corresponding to WO 2006/132244 A1, published 14.12.2006
D41: US 2009/0035544 A1, published 5.02.2009.

V. Following the communication of 20 November 2020 expressing the board's preliminary opinion that the claimed invention was not sufficiently disclosed, the appellant by letter dated 15 April 2021 filed further arguments and documents D44-D45, in particular:

D44: JP2005-84506 A
D44h: human translation in English of paragraph [0030] of D44
D44m: machine-generated translation in English of D44.

VI. Oral proceedings before the board were held on 18 May 2021.

The parties' final requests were the following:

The appellant requested that the decision under appeal be set aside and that the case be remitted to the first instance for discussion of inventive step on the basis of the claims filed as Main Request with letter of 30 July 2015 or as Auxiliary Request 1 with letter of 18

August 2017, or as Auxiliary Request 2 or 3, with letter of 8 September 2017, all requests being submitted before the first instance. Further it requested that document D30 be not admitted into the proceedings.

Respondents 1 and 2 requested that the appeal be dismissed.

VII. Claim 1 of the **main request** reads as follows:

"*1. A heat shrinkable multilayer film comprising an outer surface layer (a) formed of an ethylene terephthalate/isophthalate copolymer, a first intermediate layer (b1) formed of a polyamide resin, a second intermediate layer (b2) formed of a saponified product of an ethylene-vinyl acetate copolymer, and an inner surface layer (c) formed of a polyolefin resin, wherein the shrink of the heat shrinkable multilayer film in water at 90°C is within a range of from 3 to 45% in each of machine and transverse directions, the polyamide resin is a mixture of 60 to 90% by weight of an aliphatic polyamide having a melting point of 210°C or higher and 10 to 40% by weight of an aromatic polyamide comprising isophthalic acid and terephthalic acid as acid components, and the multilayer film is obtained by stretching a multilayer film comprising the outer surface layer (a), the first intermediate layer (b1), the second intermediate layer (b2) and the inner surface layer (c) at a draw ratio of from 2.5 to 4 times in each of machine and transverse directions and then subjecting the stretched film to a heat relaxation treatment so as to give a relaxation ratio of from 2 to 40%.*"

Claim 1 of **auxiliary request 1** differs from claim 1 of the main request insofar as the aliphatic polyamide having a melting point of 210°C or higher is **nylon 6.**

Claim 1 according to **auxiliary request 2** differs from claim 1 of the main request insofar as the outer surface layer (a) is formed of an **aromatic polyester resin obtained by polycondensing terephthalic acid and isophthalic acid as dicarboxylic acid components and ethylene glycol as a diol component.**

Claim 3 according to **auxiliary request 3** differs from claim 1 of auxiliary request 2 insofar as the aliphatic polyamide having a melting point of 210°C or higher is **nylon 6.**

Reasons for the Decision

Sufficiency of disclosure (main request)

1. Claim 1 of the main request concerns a heat shrinkable multilayer film having defined layer compositions and shrink properties which is further characterized by being obtained by stretching the multilayer film at a draw ratio of from 2.5 to 4 times in each of machine direction (MD) and transverse direction (TD) and then subjecting the stretched film to a heat relaxation treatment so as to give a relaxation ratio between 2 to 40%.

The claimed multilayer film is thus also characterized by process features which include a result to be achieved, namely "*subjecting the stretched film to a*

heat relaxation treatment ***so as to give a relaxation ratio between 2 to 40%***".

2. The appellant submitted in a first line of arguments that the meaning of this term would be directly apparent to the skilled person by reading the wording of claim 1, requiring a stretching of the multilayer film in both MD and TD followed by a heat treatment for relaxing the film. Since the stretching step includes a dimensional variation in MD and TD (film length and width), the relaxation ratio to be achieved would be understood by the skilled person reading the claim with common sense to relate to a similar dimensional variation. This interpretation is confirmed in the appellant's view by the process steps more precisely disclosed in example 1 and paragraph [0060] of the description, both referring to figure 1 and by the MD/TD ratios listed in table 3 of the patent (pages 10-11).

2.1 Paragraph [0060] of the patent and example 1, referring to figure 1, disclose that, after the stretching step while cooling, the film is drawn downward and formed into a bubble shape with fluid air introduced between pairs of rollers to form the tubular film which is held in a heat treating column for the heat relaxation treatment. As regards the heat relaxation step, it is explicitly indicated that steam alone or together with air is to be sprayed against the tubular film in order to perform heat-treating and to maintain a specified temperature for a specified period of time. Moreover, the film is to be relaxed in MD and TD **in order to reach the "relaxation ratio" specified in claim 1**. The relaxation ratio is not further defined in the description or in the cited table 3 reporting values for the MD/TD relaxation ratio.

2.2 Therefore, neither the claim nor the description and the figure of the patent explicitly indicate or suggest which is the film property varying during the heat relaxation treatment, in particular if it concerns a dimensional variation and which dimensions are varied.

Further, claim 1 (and the description) lacks any term of reference which could help to understand the relaxation ratio to relate necessarily to a precise dimensional variation (length and width) or to other possible dimensional variations (area) or to variations of other film properties (shrink tension or free shrink) possibly occurring also during the heat treatment.

The appellant also was not able to show that the term "relaxation ratio" had a univocal accepted meaning in the art (see point 4.3 infra).

Therefore, the above term requires necessarily an interpretation and, even though one possible interpretation of the term relaxation ratio could imply a dimensional variation, the claim, in the absence of a precise definition of this term, does not allow an exact distinction delimiting the scope of protection. Therefore, the claim is unclear in this respect (see Case Law of the Boards of Appeal of the EPO, 9th edition 2019, II.A.3.1.).

3. The appellant, by referring to decisions **T 593/09** and **T 2403/11**, argued that a lack of clarity did not necessarily imply that the patent lacked sufficient disclosure.

However, even though **T 593/09** (catchword) states that where a claim contains an ill-defined ("unclear", "ambiguous") parameter and where, as a consequence, the skilled person would not know whether he was working within or outside of the scope of the claim, this, by itself, was not a reason to deny sufficiency of disclosure as required by Article 83 EPC, it also states that what is decisive for establishing insufficiency within the meaning of Article 83 EPC is whether the parameter, in the specific case, is so ill-defined that the skilled person is not able, on the basis of the disclosure as a whole and using his common general knowledge, to identify (without undue burden) the technical measures necessary to solve the problem underlying the patent at issue. Similarly, **T 2403/11** followed the former decision and stated (catchword) that an ill-defined parameter may lead to insufficiency of disclosure if this parameter is relevant for solving the problem addressed in the patent.

3.1 In the present case, the description of the patent (paragraph [0062]) explains that the heat relaxation step is carried out for providing a heat shrinkable multilayer film that is excellent in appearance after the stretching, i.e. so excellent in dimensional stability that occurrence of wrinkles by slight dimension change is inhibited and suitable for secondary processability, meaning a suitability for automatic packaging machine and bag production processing. The description further states that the heat shrinkable multilayer film according to the invention can be more securely obtained by conducting the heat relaxation treatment after the stretching as described, for example in paragraph [0060].

It is thus clear from the description that the relaxation ratio is an essential feature affecting the final properties of the obtained film and, thus, is relevant for solving the technical problem addressed in the patent (see paragraph [0010]).

Indeed, a clear interpretation of this term is necessary in order to enable the skilled person to find out, if possible, which technical measures are to be adopted in the process of preparation of the claimed film in order to control the heat relaxation step and obtain the necessary amount of relaxation claimed.

3.2 Since the term "relaxation ratio" is relevant for solving the problem addressed in the patent, in accordance with the decisions cited above, the lack of clarity of the term "relaxation ratio" necessarily affects the sufficiency of disclosure since it is not possible to realize the process for preparing the claimed multilayer film without knowing how to achieve, to measure and to control this ratio.

It has thus to be established if the skilled person, on the basis of the description and of common general knowledge, would have understood the meaning of "relaxation ratio" and would have found without undue burden the technical measures to adopt in order to obtain the result specified in claim 1.

4. As regards common general knowledge, the respondents cited some textbooks (D31 to D35) indicating that the term "relaxation" was understood in the art as being related to a variation of stress and that a definition of the term "relaxation ratio" as a dimensional variation did not belong to common general knowledge.

4.1 The appellant stated that the relaxation ratio of claim 1, relating to a continuous process, could only be understood as a dimensional variation and did not imply a variation of stress. Referring to decision **T 0063/06** it argued that the burden of proof that common general knowledge would not enable the skilled person to carry out the invention was on the respondents/opponents.

However, even though **T 0063/06** states (catchword and reasons 3.3) that generally the burden of proof to establish insufficiency of disclosure lies upon an opponent, it also states that when the patent does not give any information of how a feature of the invention can be put into practice (**like in the present case**), only a relatively weak presumption exists that the invention is sufficiently disclosed. In such case, the opponent can discharge his burden by plausibly arguing that common general knowledge would not enable the skilled person to put this feature into practice. The burden of proof thereupon shifts on the patent proprietor to establish that common general knowledge would indeed enable the skilled person to carry out the invention.

Since in this case, the respondents have convincingly argued that the term "relaxation ratio" having the meaning intended by the appellant was not to be found in textbooks and did not represent common general knowledge, the burden of proof for establishing sufficiency is clearly on the appellant/patent proprietor.

4.2 As a reaction to the respondents' submissions, the appellant filed patent documents published before and after the relevant date of the patent in order to prove that it was common general knowledge that the term

"relaxation ratio" in a continuous process as claimed related to a dimensional variation.

In this respect, it referred to decision **T 412/09** (2.1.3 of the reasons) wherein it is stated that even though common general knowledge of the person skilled in the art is, as a general rule, established on the basis of encyclopedias, textbooks and the like, this does not mean that common general knowledge cannot be established for the mere fact of being disclosed in a patent specification. Rather, case law contemplates exceptions to the general rule mentioned above and in particular circumstances allows the establishment of common general knowledge based on patent specifications, in particular when a series of patent specifications provides a consistent picture that a particular technical procedure was generally known and belonged to the common general knowledge in the art at the relevant date.

4.2.1 However, as explained in the cited decision, in regard of establishing common general knowledge, only documents published before the relevant date of the patent can be considered. Therefore, any possible definition of the term "relaxation ratio" found in post-published documents cannot represent an indirect indication of common general knowledge in the absence of a specific indication that the meaning of this term already belonged to older prior art. The latter is not the case in the documents cited by the appellant and published after the priority date (16.02.2006) or even after the filing date of the patent (15.01.2007), i.e. documents D24, D25, D40 and D41, which consequently must be disregarded, as already indicated in the board's communication of 20 November 2020 (point 4.4.1).

4.3 As regards the other cited documents, i.e. D26, D27, D36, D38, D39 and D44, the board remarks that

- D26 in example 2 discloses (page 11, lines 27-28) a process wherein a stretched tape yarn is carried over a series of seven rolls with speed reduction for annealing and relaxing the film. The **"relax rate"** is defined as the percentage reduction in speed between the first and seventh roll;

- D27, concerning a double or triple bubble process for manufacturing orientated cellulose films, on page 9, lines 17-23, referring to figure 2 (double bubble process), discloses that the machine direction orientation in the second bubble is obtained by applying a different speed to the inlet and outlet nip rolls and precisely a higher speed to the outlet nip rolls in order to stretch the film; the **longitudinal** (MD) **drier stretch** is thus defined as the ratio of inlet speed to outlet speed. This step however is not a heat relaxation step. Moreover, the document does not contain any definition of a relaxation ratio with regard to the relaxation step disclosed in figure 4 with respect to a three bubble process;

- D36 (column 3, lines 9-14 and column 4, lines 22-23) discloses a process wherein a stretched film is annealed and allowed to relax over a period of 3 seconds by controlling the rolls rotation. This document however does not contain any definition whatsoever concerning a relaxation step;

- D38, though using a similar terminology as the patent in suit and involving a relaxation heat treatment

(column 8, lines 26-34; example 1, figure 1), does not contain any definition of the term "relaxation ratio";

- D39 (claim 1; column 3, lines 52-57) discloses a process wherein a stretched film is heated and relaxed in the longitudinal direction (MD) and defines the "**relaxation ratio**" of the film as being the ratio of the linear speed of rotation at the surface of the rolls having a slower speed to the linear speed of rotation at the surface of the rolls having a higher speed;

- D44 (see paragraph [0030] of D44m and D44h) concerns a process wherein a stretched film is relaxed and shrunk in a treatment bath and the "**relaxation ratio**" is defined as the shrinkage of the film. However, it concerns a process without a heat treatment as carried out in the patent.

Therefore, only document D39 (and possibly D36) contains a definition of a relaxation ratio in MD which can be applied to the process of claim 1 at issue. It cannot thus be derived therefrom that there existed a series of patent specifications providing a consistent picture within the meaning of **T 412/09**.

Therefore, the board agrees with the respondents that the definition of the term "*relaxation ratio*" as a dimensional variation was not part of common general knowledge.

4.4 However, even assuming for the sake of argument in the appellant's favour that a relaxation ratio in the MD during heat treatment and relaxing of a stretched film in a continuous process was consistently understood in the art to relate to a dimensional variation of film

length operated by modifying the speed of the nip rolls so that the speed after heat treatment is slower than the speed before heat treatment and that its measurement and control were known to the skilled person, the cited documents would still not disclose or suggest how a relaxation in TD should be understood, measured and controlled.

4.4.1 Furthermore, even if the relaxation ratio in TD would be considered to concern a difference in width of the film before and after the heat treatment for consistency with the relaxation in MD, there is no evidence in the cited documents that the technical means for achieving, measuring and controlling this dimensional variation in TD were common general knowledge.

4.4.2 In the appellant's view, a control of the film width variation during the heat treatment would be possible by controlling the pressure and temperature during the heat treatment. However, a relationship between pressure and temperature in order to control relaxation in the TD is neither suggested in the patent nor in the cited documents. An enabling disclosure therefor is missing in the patent and in common general knowledge.

4.5 From the above, it results that it was not possible for the skilled person to derive from the description of the patent and from common general knowledge which technical means had to be adopted in order to achieve at least the required relaxation ratio in TD.

5. The Board thus concludes that already on these grounds the claimed invention lacks sufficient disclosure.

5.1 It is thus not necessary to discuss all other arguments and documents submitted by the respondents, or to decide on the admissibility of the documents cited by the parties during appeal.

Auxiliary requests 1 to 3

6. Claim 1 according to the auxiliary requests 1 to 3 differs from claim 1 of the main request only insofar as it specifies the polyamide of the first intermediate layer and/or the polymer of the outer layer. These claims thus still require that the stretched film is subjected to a heat relaxation treatment so as to give a relaxation ratio between 2 to 40%.

6.1 Therefore, all these requests lack of sufficiency of disclosure for the above reasons.

7. The board concludes that none of the appellant's requests is allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Pinna P. Ammendola

Decision electronically authenticated