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**Datasheet for the decision
of 19 October 2020**

Case Number: T 0223/17 - 3.2.05

Application Number: 10707411.4

Publication Number: 2403703

IPC: B29C47/06, B29C47/20, B29C61/06

Language of the proceedings: EN

Title of invention:

Multilayer, heat-shrinkable film comprising a plurality of microlayers and method for its fabrication

Patent Proprietor:

Cryovac, Inc.

Opponent:

Isarpatent

Headword:

Relevant legal provisions:

EPC Art. 54, 56, 83, 123(2)
RPBA 2020 Art. 25(3)
RPBA Art. 13(1), 13(3)

Keyword:

Amendments - added subject-matter (no)

Sufficiency of disclosure (yes)

Novelty (yes)

Inventive step (yes)

Admittance of new inventive step objection (yes)

Decisions cited:

G 0003/89, G 0011/91, G 0001/95, G 0002/10, T 0450/89,

T 0225/93, T 0815/07

Catchword:



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Case Number: T 0223/17 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 19 October 2020

Appellant:

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Decision under appeal:

**Interlocutory decision of the Opposition
Division of the European Patent Office posted on
28 October 2016 concerning maintenance of the
European Patent No. 2403703 in amended form.**

Composition of the Board:

Chairman P. Lanz
Members: B. Spitzer
 T. Karamanli

Summary of Facts and Submissions

- I. The opponent lodged an appeal against the interlocutory decision of the opposition division that European patent No. 2 403 703 as amended according to the third auxiliary request filed on 18 April 2016 meets the requirements of the EPC.
- II. During the opposition proceedings, the opponent raised the grounds for opposition according to Article 100(a) EPC in conjunction with Articles 54 and 56 EPC (lack of novelty and lack of inventive step) as well as according to Article 100(b) and (c) EPC.
- III. Oral proceedings were held before the board of appeal on 19 October 2020.
- IV. The appellant (opponent) requested that the decision under appeal be set aside and that the European patent be revoked.
- V. The respondent (patent proprietor) requested that the appeal be dismissed or, as an auxiliary measure, that the decision under appeal be set aside and that the patent be maintained on the basis of the claims of one of auxiliary requests 1 to 5 filed with its reply dated 20 July 2017.
- VI. The documents cited during the appeal proceedings include the following:

D1: WO 00/76765 A1

D2: EP 0 476 836 A1

D3: WO 2009/095231 A2

D4: ASTM D1922-06a

VII. Claim 1 according to the respondent's main request reads as follows (using the parties' feature designations in square brackets):

"[1] A multilayer, heat-shrinkable film, comprising:
[1.1] a. a bulk layer; and
[1.2] b. a microlayer section comprising a plurality of microlayers;
[1.2.1] wherein said microlayer section comprises at least 10 microlayers;
[1.3] wherein, each of said microlayers and said bulk layer have a thickness, the ratio of the thickness of any of said microlayers to the thickness of said bulk layer ranging from about 1:2 to about 1:40; and
[1.4] wherein, said heat-shrinkable film has a thickness of less than 17.8 μm (0.7 mil) and
[1.5] an Elmendorf Tear value (ASTM D1922-06a) of at least 10 grams, as measured in at least one direction along a length or width dimension of said film."

VIII. Claim 9 according to the main request has the following wording (using the parties' feature designations in square brackets):

"[9] A method of making a multilayer, heat-shrinkable film, comprising:
[9.1] a. extruding a bulk layer;
[9.2] b. coextruding at least 10 microlayers to form a microlayer section;
[9.3] c. merging said bulk layer and said microlayer section to form a multilayer film; and
[9.4] d. stretch-orienting said multilayer film under conditions that impart heat-shrinkability to said film;
[9.5] wherein, each of said microlayers and said bulk layer have a thickness, the ratio of the thickness of

any of said microlayers to the thickness of said bulk layer ranging from about 1:2 to about 1:40;
[9.6] wherein, said film has a total free shrink (ASTM D2732-03) of at least about 10% at 93 °C (200 °F);
[9.8] wherein, at least one of the microlayers comprises a blend of two or more polymers and has a composition that is different from at least one other microlayer; and
[9.7] wherein said heat-shrinkable film has an Elmendorf Tear value (ASTM D1922-06a) of at least 1.18 g/μm (30 grams/mil), as measured in at least one direction along a length or width dimension of said film."

IX. The appellant essentially argued as follows.

Main request, added subject-matter

The amendment in claim 1 "said microlayer section comprises at least 10 microlayers" and the corresponding amendment in claim 9 "coextruding at least 10 microlayers ..." made during the examination proceedings added subject-matter which extended beyond the content of the application as filed.

Regarding the general principles established by the boards of appeal, reference was made to G 1/93 (OJ EPO 1994, 541), the "gold standard" established in G 2/10 (OJ EPO 2012, 376), G 3/89 (OJ EPO 1993, 117) and G 11/91 (OJ EPO 1993, 125). With respect to implicit disclosures, attention was drawn to decisions T 860/00, T 947/05, T 1772/06, T 1041/07 and T 1125/07. It was important to identify the actual teaching conveyed by the original disclosure. Information merely rendered obvious from the original disclosure should not be

considered as implicitly disclosed (see T 823/96, T 1125/07 and T 583/09).

Page 22, lines 17 to 19, of the application as filed disclosed that "[g]enerally, the microlayer section 60 may comprise any desired number of microlayers, e.g., between 2 and 50 microlayers, such as between 10 and 40 microlayers, etc.". As the numerical value "10" was only disclosed as a lower limit of a range, the feature "at least 10" was not directly and unambiguously derivable, using common general knowledge, and seen objectively and relative to the date of filing, from the whole of the documents as filed. It was objected to the statement in the decision of the opposition division that "said feature is derivable from a combination of the originally disclosed preferred narrow range of from 10 to 40 microlayers, and the part-range of from 40 to an infinite number, which is lying within the originally disclosed overall range of from two to an infinite number of microlayers." (see decision under appeal, point 4.1.1). Neither the Guidelines for Examination in the European Patent Office, edition November 2016, Part H, Chapter IV, 2.4, nor the Case Law of the Boards of Appeal of the European Patent Office, 8th edition 2016, II.E.1.3.1 were applicable as it was not a combination of a general and a preferred range.

Furthermore, it was questioned whether "a plurality" meant "two to infinite", as interpreted by the opposition division, and whether this constituted a general range. Especially with respect to the implicit disclosure, attention was drawn to decisions T 95/97, T 51/10, T 677/91, T 465/92, T 511/92, T 823/96, T 297/11, T 2522/10, T 701/09 and T 1523/07. Pursuant to the latter decision, the skilled person would have

had to have been unable to conceive of any realistic alternative to the allegedly implicit feature. It was concluded that a general range of "from two to an infinite number of microlayers", as stated by the opposition division, was neither explicitly nor implicitly disclosed in the application as filed. Decision T 209/94 (see Case Law of the Boards of Appeal of the European Patent Office, 7th edition 2013, I.C. 5.2.1), cited by the opposition division, was not applicable as it related to selection inventions and not to an upper limit of an indefinite number.

Regarding the disclosure on page 9, lines 21 to 26, and page 11, lines 21 to 23, of the application as filed, it was admitted that the number of microlayer distribution plates corresponded to the number of microlayers. However, there was no direct link between the film and the method, neither in the claims nor in the description. In addition, the range was "at least 5", and "10" was just a specific example. Finally, this passage was not disclosed in combination with feature [1.3].

Main request, lack of sufficiency of disclosure

The patent in suit did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art because it was not possible to determine the Elmendorf Tear value in accordance with ASTM D1922-06a (document D4) in a reproducible manner and without undue burden. The appellant contested the argumentation of the opposition division that this was only an allegation and not proven by experimental data. First, in the standard itself, two different specimens were mentioned which did not lead to the same result. In this context,

reference was made to decision T 225/93. Second, the standard itself mentioned under point 1.2 that "because of (1) difficulties in selecting uniformly identical specimens, (2) the varying degree of orientation in some plastic films, and (3) the difficulty found in testing highly extensible or highly oriented materials, or both, the reproducibility of the test results may be variable and in some cases, not good or misleading." In this regard, it was referred to decisions T 815/07 and T 225/93.

Main request, lack of novelty

Novelty of the subject-matter of claims 1 and 9 was contested vis-à-vis documents D1 and D3.

Document D1

The multilayer film of document D1 was a heat-shrinkable film (feature [1]). Page 4, lines 16 to 20, of document D1 disclosed a film with biaxial or uniaxial orientation. The skilled person would have implicitly understood that the film of document D1 could be oriented. Orientation was a prerequisite for heat-shrinkability. As in the patent in suit, the term "oriented" was used interchangeably with the term "heat-shrinkable" (see page 2, lines 25 to 26, of the patent in suit). Thus, the film disclosed in document D1 was a heat-shrinkable film.

Feature [1.5] was an intrinsic feature of the multilayer heat-shrinkable film having all the other features of claim 1. It was referred to in paragraphs [0013], [0014], [0015] and especially paragraph [0016] of the patent in suit, where it was summarised that the "foregoing embodiments represent significant

improvements in Elmendorf Tear vs. conventional shrink films, i.e., those that do not have a microlayer section." The conclusion that the significant improvement in Elmendorf Tear was due to the number of microlayers was also supported by paragraph [0083] of the patent in suit, the first sentence of which read: "An unexpected benefit that was found to result from the inclusion of microlayers in a shrink-film was an increase in Elmendorf Tear resistance." To further confirm this, the declaration of one of the inventors, Larry Bikle McAllister Jr, which had been filed by the patent proprietor during the examination proceedings, was mentioned.

Regarding the method of claim 9, it was partly referred to the arguments put forward for claim 1. This implied that features [9.4], [9.6] and [9.7] were at least implicitly disclosed. Feature [9.8] was disclosed in document D1 on page 10, lines 15 to 20. This embodiment was disclosed in a direct and unambiguous way together with the remaining features of claim 9.

Document D3

Document D3 disclosed a multilayer, heat-shrinkable film (feature [1]) (see page 19, lines 9 to 12), which was combined with the generic disclosure on page 7, lines 2 and following of document D3. Regarding feature [1.1], reference was made to it on page 7, line 14. Feature [1.2] was referred to on page 7, line 4. Feature [1.2.1] was disclosed on page 7, line 29.

With respect to feature [1.3], the teaching on page 13, lines 7 to 8, according to which the thickness of the microlayers most preferably ranged from about 0.1 μm to about 2.0 μm , was combined with the teaching on page

19, line 10, according to which the thickness of the film was between 15 μm and about 30 μm for heat-shrinkable structures, or with the teaching of page 18, line 27, according to which the thickness of the tie or adhesive layer was in the order of 1 to 5 μm . The adhesive layer could be compared to the bulk layer as the bulk layer in the patent in suit could be an outer layer of the film or an intermediate layer (see e.g. paragraphs [0072] to [0074] of the patent in suit). The passage on page 13, lines 1 to 8, of document D3 did not relate to a specific embodiment but disclosed the thickness of the microlayers in a general manner. The thickness ratio was also mentioned on page 16, lines 8 to 9, where it was disclosed that "[t]he outer layer (b) will have a thickness of at least two or three times higher than the thickness of the thicker microlayer in the sequence (a)". The outer layer (b) corresponded to the bulk layer. This embodiment was directly linked to the general disclosure. Although it was not disclosed that all microlayers had the same thickness, it was not excluded that the ratio of the thickness of any of the microlayers to the thickness of the bulk layer fulfilled the condition of feature [1.3].

Feature [1.4] was explicitly disclosed on page 19, line 10. The thickness of the film was 15 μm and, therefore, fell within the claimed range ("thickness of the film of less than 17.8 μm "). The Elmendorf Tear value according to feature [1.5] was an inevitable consequence of the multilayer heat-shrinkable film design of claim 1, as explained above in the context of document D1.

For method claim 9, it was pointed to the arguments put forward regarding the corresponding features of

claim 1. Concerning feature [9.6] defining the total free shrink, reference was made to page 5, lines 8 to 13, of document D3, where a free shrink of at least 5 % at 95 °C was defined, and to page 21, line 27, to page 22, line 5, where a free shrink of at least 5 % at 95 °C, preferably at least 10 %, 15 % or 20 %, was disclosed. With regard to feature [9.8], page 7, line 27, to page 8, line 5 was cited. Polymer blends were used for some layers to further improve the properties of the end structure. This structure was disclosed together with the other features of claim 9.

Moreover, Example 5 of document D3 (see page 29) disclosed all the features of claim 9. It was based on the film of Example 1 (see page 29, line 3), which was a multilayer, heat-shrinkable film with 48 microlayers obtained by coextrusion (see page 27, lines 6 and 7). This film was stretch-oriented to impart heat-shrinkability (see page 29, lines 3 to 8). The thickness ratio of the microlayer to the bulk layer was $1.1 \mu\text{m} / 17.5 \mu\text{m}$ (= 0.06), which lay within the claimed range of 1:2 to 1:40. Feature [9.6] was disclosed as the film of Example 5 had a free shrink of 18 % in MD and 21 % in TD at 120 °C. For feature [9.7], reference was made to the previous argumentation with regard to feature [1.5]. Feature [9.8] was directly and unambiguously disclosed on page 7, line 29, to page 8, line 5, and belonged to the general disclosure of the invention of document D3 (see page 7, line 2).

Main request, lack of inventive step, combination of document D2 with document D1

The subject-matter of claims 1 and 9 did not involve an inventive step over document D2 in combination with document D1.

Document D2 was considered to be the closest prior art since it was directed to a multilayer (see page 2, lines 43 to 45) heat-shrinkable film (see page 2, lines 50 to 52, page 4, line 30). The surface layer of a polyester (see page 2, line 43) was considered a bulk layer. The differentiating features were features [1.2] to [1.5].

The objective technical problem had to be formulated in view of paragraph [0016] of the patent to be providing a multilayer film having good mechanical properties while using less polymer material. The opposition division - due to the comparison with conventional shrink films discussed in paragraph [0016] of the patent - restricted the problem to shrink films, in particular to providing a multilayer shrink film having good mechanical properties while using less polymer material. The objective technical problem should not be restricted to the improvement of tear resistance, as the technical problem addressed had to be formulated in such a way that it did not contain pointers to the solution or partially anticipate the solution.

The skilled person would take into account the teaching of document D1 as it disclosed a heat-shrinkable film - based on the definition of the term "heat-shrinkable" in the patent in suit (see paragraph [0004] of the patent in suit). However, even if document D1 did not relate to heat-shrinkable films, the skilled person would consider the teaching of document D1 with the expectation that adding a microlayer section in a heat-shrinkable film would also improve the mechanical properties of the heat-shrinkable film. The skilled person would derive this from the disclosure of document D1 (see page 4, lines 16 to 20): "... an

advantage of the present invention is to provide a multilayer film ... that may improve mechanical properties, including, ... biaxial or uniaxial orientation." Furthermore, it was common general knowledge how to produce heat-shrinkable films, i.e. by orientation and cooling. Document D1 related to the same technical field, namely multilayer films useful in packaging (see page 1, lines 7 to 15). It described the same problems and advantages (see page 2, lines 9 to 14; page 3, lines 12 to 16; page 4, lines 3 to 20; page 6, lines 29 to 31), for example, improving the technical quality of the film (ability to resist cracking and other mechanical properties).

Features [1.2] to [1.4] were known from document D1, and feature [1.5] was a physical property which described a result to be achieved (see novelty discussion vis-à-vis document D1). Thus, the multilayer film disclosed in document D1 comprising the same structural features as the multilayer film of the patent in suit also possessed an Elmendorf Tear value within the range of claim 1. In answer to the question by the board which layer of the film disclosed in document D2 would be replaced by the microlayer structure, it was pointed to the barrier layer as both films in documents D1 and D2 had barrier layers.

The same arguments applied *mutatis mutandis* to the subject-matter of claim 9.

Main request, lack of inventive step, admittance of the new objection based on document D1 alone

Regarding a new lack of inventive step attack based on document D1 alone, which had been raised for the first time at the oral proceedings before the board, it was

referred to decisions G 1/95 (OJ EPO 1996, 615) and T 184/17 in support of the request to admit this new objection at this late stage of the proceedings. Document D1 had already been thoroughly discussed for novelty and, therefore, the framework was the same. The new objection was neither complex nor would its admission be contrary to procedural economy and therefore it should be admitted in accordance with Article 13(1) RPBA 2007.

Main request, lack of inventive step, document D1

The skilled person would use the film disclosed in document D1 to make a heat-shrinkable film by orienting and cooling it accordingly. Document D1 taught that the film was suitable for orientation. Inevitably, the heat-shrinkable film would show the Elmendorf Tear value of feature [1.5] of claim 1. The same objection applied to claim 9.

- X. The respondent's submissions may be summarised as follows.

Main request, added subject-matter

A basis for the amendment "at least 10 microlayers", could be found in claim 1 as originally filed, where "a plurality of microlayers" was mentioned, and on page 22, lines 17 to 19, where "any desired number of microlayers, e.g. between 2 and 50 microlayers, such as between 10 and 40 microlayers, etc." was disclosed. In the decision under appeal, it was correctly concluded that the term "a plurality" corresponded to a general, open-ended range of at least two. Hence, the disclosure "at least 10 microlayers" was based on a combination of end-points of disclosed ranges. In view of decisions

T 201/83, T 522/96 and T 327/03, it was clear that not only end-points of a preferred range might mark an upper or lower limit of a particular sub-range, but also singular values. In reply to the appellant's arguments that the range "between 10 and 40 microlayers" was not a preferred range but an example range, it was noted that this range was narrower than the general range. In addition, it was pointed to page 9, lines 23 to 26, of the application as filed where an explicit disclosure for the feature "at least 10 microlayers" was to be found: "In many embodiments of the invention, the number of microlayer distribution plates 48 in microlayer assembly 34 will be at least about 5, e.g., 10, 15, 20, 25, 30, 35, 40, 45, 50, etc., or any number of plates in between the foregoing numbers." The number of distribution plates 48 determined the number of microlayers of the resulting multilayer film, which was disclosed on page 11, lines 21 to 23, of the application as filed. The method and film were indeed linked to each other as both were disclosed as being according to the invention (see page 6, lines 16 to 17). As features [1.3] and [1.2] were present in claim 1 as originally filed, these features were disclosed in combination. Feature [1.2] "a plurality of microlayers" was just further restricted.

Main request, sufficiency of disclosure

T 225/93 was not applicable to the present case as it dealt with a selection out of three different methods whereas the ASTM standard D1922-06a taught that a specimen having a constant radius testing length was the "preferred or referee specimen" (see document D4, page 1, paragraph 1.1; page 2, paragraph 6.1). Apart from this, the appellant did not provide experimental data showing that the use of a different geometry of

the specimen actually lead to a different Elmendorf Tear test result. Concerning the reproducibility of the test results, the ASTM standard itself described measures to overcome these problems. Furthermore, it was emphasised that the ASTM standard was a widely accepted industry standard for accurately testing propagation tear resistance.

Main request, novelty

The subject-matter of claims 1 and 9 was new vis-à-vis documents D1 and D3.

Document D1

It was contested that document D1 disclosed features [1], [1.4] and [1.5] of claim 1.

The passage cited by the appellant (see document D1, page 4, lines 16 to 20) as showing that the film of document D1 was a biaxially or uniaxially oriented film did not disclose that the film was oriented. It just mentioned that an advantage of the present invention was to provide a multilayer film and a method of manufacturing the film that "may improve mechanical properties, including, but not limited to, deadfold, ... improved thermal stability to sterilization and heat filling and biaxial or uniaxial orientation." This meant that it was not an oriented film but that the film had better stability to orientation. In addition, not any oriented film was a heat-shrinkable film. Document D1 did not disclose specific conditions necessary for a film being heat-shrinkable. From paragraph [0004] of the patent in suit, it was clear that heat-shrinkability requires more than mere orientation of a film. Although the

patent in suit used the terms "orientation" and "heat-shrinkability" interchangeably (see paragraph [0004] of the patent), document D1 did not include a corresponding definition. Therefore, feature [1] was not disclosed in document D1.

With respect to feature [1.5], it was pointed out that the claimed Elmendorf Tear value was not an intrinsic feature of the multilayer film comprising features [1] to [1.4]. These features represented essential structural requirements of the multilayer film but did not represent a sufficient condition for achieving the Elmendorf Tear value of feature [1.5]. This fact was supported, for example, by paragraph [0083] of the patent in suit, where it was disclosed that the inclusion of microlayers in a shrink-film increased the Elmendorf Tear resistance, and that in a majority but not all the films, the Elmendorf Tear value was greater than 10 grams. As further support, Example 14 of the patent in suit (see paragraph [0124] and Table 3 on page 29) was mentioned. This example fulfilled features [1] to [1.4] but not feature [1.5] as the Elmendorf Tear value was less than 10 grams (4.9 / 4.5 grams).

Document D1 did not disclose features [9], [9.4], [9.6], [9.7] and [9.8] of claim 9.

Features [9], [9.4], [9.6] and [9.7] were associated with the heat-shrinkability of the film. Therefore, it was referred to its arguments presented for claim 1.

Document D3

Document D3 did not disclose a heat-shrinkable film having a combination of features [1] to [1.5].

There was no clear and unmistakable teaching of a combination of the different text passages on pages 7, 13, 18 and 19 cited by the appellant. The basic principle that the content of a document must not be treated as something in the nature of a reservoir from which the features pertaining to separate embodiments could be combined to artificially create a particular embodiment was pointed to.

Feature [1.3] required that the ratio of the thickness of any of the microlayers to the thickness of the bulk layer was within the claimed range. This was not disclosed in document D3. Especially on page 16, lines 8 to 9, this ratio was only anticipated for the thicker microlayer in the sequence.

Feature [1.5] was not directly and unambiguously disclosed in document D3 for the same reasons as set out for document D1.

Document D3 did not disclose features [9.5], [9.6], [9.7] and [9.8] of claim 9.

For features [9.5] and [9.7] of claim 9, the same arguments applied as for the corresponding features [1.3] and [1.5] of claim 1.

The text passage cited by the appellant regarding feature [9.6] (see document D3, page 21, line 27, to page 22, line 6) encompassed several alternatives, like films having solid-state orientation, films without solid-state orientation, heat-shrinkable films, heat-set films, annealed films, etc. The skilled person had to select a free shrink and combine this with the remaining film properties. Therefore, feature [9.6] was not directly and unambiguously disclosed in document

D3.

Feature [9.8] was not disclosed in combination with the other features of claim 1 as the text passage on page 8, lines 9 to 14, could neither be combined in a direct and unambiguous way with the number of microlayers on pages 12 or 16 nor with the thickness ratio and the embodiment on page 18. Also, the text passage on page 7, line 27, to page 8, line 5, encompassed several alternatives with respect to the structure of the microlayer section.

Example 5 was the only example of document D3 directed to an oriented film. In this example, both the thickness of the film being 40 μm and the thickness ratio being (1.1 μm / 75 μm) 1:68 were outside the ranges specified in claims 1 and 9.

Main request, inventive step, combination of document D2 with document D1

The subject-matter of claims 1 and 9 was not obvious in view of a combination of document D2 with document D1. The parties were in agreement on the closest prior art and the distinguishing features.

The objective technical problem was to provide a multilayer, heat-shrinkable film having good mechanical properties, in particular superior tear resistance properties. The tear resistance had to be included in the objective technical problem as the improved tear resistance was the technical effect. Such a formulation would not include the result because feature [1.5] was a specific value for the tear resistance.

The skilled person would not have taken into account

document D1 because it did not deal with the heat-shrinkability of a multilayer film. Document D1 did not disclose orientation conditions which included the rapid cooling of the heated film after orientation to impart heat-shrinkability.

Moreover, it focused on an improved barrier material for a flexible film packaging and did not describe the same problems as the present invention. The properties "cracking resistance" and "tear resistance" were not synonymously used in the art. Tear resistance was described in paragraph [0081] of the patent specification. In contrast, cracking resistance was determined via flex testing. The problem of tearing in heat-shrinkable films was not discussed in document D1. The argument of the appellant that the person skilled in the art would apply the teaching of document D1 to the heat-shrinkable film known from document D2 was based on an *ex post facto* analysis.

Even if the skilled person had combined documents D2 and D1, they would not have arrived at the subject-matter of claims 1 or 9 as document D1 did not disclose a combination of the distinguishing features [1.2], [1.2.1], [1.3], [1.4] and [1.5]. Furthermore, the skilled person did not know which layer of the film disclosed in document D2 should be replaced by a microlayer structure according to document D1 and what the resultant properties were.

Main request, inventive step, document D1 alone, admittance of appellant's new objection

The new inventive step objection based on document D1 alone should not be admitted. As the board had informed the parties in a preliminary opinion that the subject-

matter of claims 1 and 9 appeared to involve an inventive step over a combination of document D2 with document D1, the appellant could have raised the new objection at an earlier state.

Main request, inventive step, document D1 alone

Even if the skilled person used the film of document D1 to make a heat-shrinkable film, this would not result in a film which inevitably or implicitly included feature [1.5]. This has been already discussed for novelty.

Reasons for the Decision

1. *Main request, added subject-matter*
- 1.1 Regarding the requirements of Article 123(2) EPC, the parties' dispute hinges on whether the feature of claim 1 and claim 9 of "at least 10 microlayers", which had been added to the claims during the examination proceedings, extends beyond the content of the patent application as filed.
- 1.2 The "gold standard" (G 2/10, *supra*) for assessing compliance with Article 123(2) EPC requires that any amendment can be made only within the limits of what a skilled person would derive directly and unambiguously, using common general knowledge, and seen objectively and relative to the date of filing, from the whole of the application documents as filed (G 3/89, *supra*; G 11/91, *supra*). The content of the patent application as filed is not limited to what is explicitly stated but includes any teaching which is implicit for the skilled person in the art. The underlying idea is that

after the amendment, the skilled person must not be presented with new technical information (G 2/10, *supra*) (see Case Law of the Boards of Appeal of the European Patent Office, 9th edition 2019, II.E.1.1).

For forming a range by a combination of end-points of disclosed ranges, it is a generally accepted principle that in the case of a disclosure of both a general and a preferred range, a combination of the preferred disclosed narrower range and one of the part-ranges lying within the disclosed overall range on either side of the narrower range is unequivocally derivable from the original disclosure of the patent in suit and thus supported by it (see Case Law of the Boards of Appeal of the European Patent Office, 9th edition 2019, II.E.1.5.1).

1.3 In the present case, an original disclosure relating to the contested amendment can be found in claim 1 as originally filed ("a plurality of microlayers"), on page 9, lines 23 to 26, of the application as filed ("the number of microlayer distribution plates ... will be at least about 5, e.g., 10, 15, 20, 25, 30, 35, 40, 45, 50, etc. or any number of plates in between the foregoing numbers.") and on page 22, lines 17 to 19, of the application as filed ("Generally, the microlayer section 60 may comprise any desired number of microlayers, e.g. between 2 and 50 microlayers, such as between 10 and 40 microlayers, etc."). As disclosed in Figure 2, reference signs 48 and 34, and on page 11, lines 22 to 23, the number of microlayer distribution plates corresponds to the number of microlayers. The latter was not contested by the parties.

1.4 In view of the above, the overall teaching to a skilled person in the application as filed is that the general

range is a plurality of microlayers, which comprises at least two microlayers up to an infinite number. More preferred ranges are 2 to 50 or 10 to 40 microlayers. This means that 10 microlayers are disclosed as a lower limit of a narrower range and an infinite number of microlayers as the open-end upper limit of the general, broader range. This results in a range of at least 10 microlayers (see point 1.2).

A further basis for the disputed amendment is the number of microlayer distribution plates being "at least 5" in which "10, 15, 20, 25, 30, 35, 40, 45, 50, etc." microlayer distribution plates are mentioned as examples (see page 9, lines 23 to 26, of the application as filed). Consequently, "at least 10 microlayers" is a subrange of this range with the lower limit being explicitly disclosed.

- 1.5 Considering the first line of argumentation, the appellant raised doubts whether the lower and upper limits were implicitly disclosed and could be derived from the application as filed in a direct and unambiguous way. As "a plurality" means "more than one", the lower limit of two and an upper open-end limit of infinite are explicitly disclosed. Therefore, the decisions (T 860/00, T 947/05, T 1772/06, T 1041/07, T 1125/07, T 823/96, T 583/09, T 95/97, T 51/10, T 677/91, T 465/92, T 511/92, T 823/96, T 297/11, T 2522/10, T 701/09 and T 1523/07) put forward to emphasise that the original disclosure must be at least implicit, not only obvious for the skilled person, are not relevant for the case at hand due to an explicit disclosure in the original application.

With respect to the upper limit, which according to the decision under appeal was an infinite number, the

appellant pointed out that an infinite number would technically not make sense. It questioned whether decision T 209/94 cited by the opposition division was applicable in the present case.

The board notes that Article 123(2) EPC is concerned with whether an amended patent (application) contains subject-matter which extends beyond the content of the application as filed. The contested amendment of claim 1 only concerns the lower limit of the claimed range ("at least 10 microlayers"), whereas the open upper range end of the original feature ("a plurality of microlayers") remains unamended. Therefore, the latter cannot constitute an extension beyond the content of the application as filed. Moreover, even though the claimed upper end of the range of the original and the amended feature is open, the fact that it is not realistic for the skilled person to provide an endless number of microlayers when implementing the claimed invention, is not an issue under Article 123(2) EPC.

- 1.6 A further argument brought forward by the appellant was that the decisions dealing with a combination of a general range and a preferred range were not applicable because there was no preferred range but an example range and no general range. The board, however, under the present circumstances, does not see any difference between an exemplified range and a preferred range as regards the original disclosure in the application as filed. The example range is narrower compared to the general range, and both are explicitly disclosed. The combination of a lower limit of the narrow range and an upper general limit is, hence, in compliance with established case law (see e.g. T 925/98, T 2/81, T 201/83, T 53/82, T 571/89, T 656/92, T 522/96 and T 947/96, T 328/10, T 2001/10 and T 1107/06 cited by

the appellant with reference to Chapter II.E.1.3.1. of the Case Law of the Boards of Appeal (8th edition 2016)).

1.7 The appellant's argument that the method and the film were not directly linked and that, thus, the number of microlayer distribution plates could not be used as a basis for feature [1.2.1] cannot be accepted as the whole application discloses that the film is produced by the system 10 (see for example page 6, lines 16 to 17, of the application as filed). Therefore, in the original application, the number of microlayers of the film necessarily corresponds to the number of microlayer distribution plates in the system.

1.8 For these reasons, the board concludes that claims 1 and 9 of the main request meet the requirements of Article 123(2) EPC.

2. Main request, sufficiency of disclosure

2.1 Article 83 EPC states that a European patent application must "disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art".

2.2 Claim 1 discloses a multilayer heat-shrinkable film having an Elmendorf Tear value of at least 10 grams as measured in at least one direction along a length or width dimension of this film (see feature [1.5]). The Elmendorf Tear value is determined according to ASTM D1922-06a (see document D4), which is a well-known standardised test method. The skilled person can be expected to perform this method as disclosed in document D4. Although document D4 mentions two test specimens, a rectangular type and one with constant

radius testing length, it explicitly states that the latter shall be "the preferred or referee specimen" (see page 1, point 1.1 and page 2, point 6.1).

- 2.3 With respect to the reproducibility of the test results, document D4 mentions on page 1, point 1.2, that the reproducibility of the test results may be variable due to (1) difficulties in selecting uniformly identical specimens, (2) the varying degree of orientation in some plastic films and (3) the difficulty found in testing highly extensible or highly oriented materials, or both. The board notes that the first two reasons (1) and (2) are not a result of an inaccuracy of the test method but of the irregularity of the plastic film to be tested. In case (3), oblique tearing might occur. This is to some degree compensated for by the use of the specimen with a constant radius testing length, as stated in document D4 (see page 6, point 6.1 and Figure 1).
- 2.4 Moreover, the appellant demonstrated neither that the Elmendorf Tear value was subject to significant variation nor that the variation would prevent the skilled person from obtaining a multilayer heat-shrinkable film according to claim 1. Even if the skilled person got slightly non-uniform results in the particular case of applying Elmendorf-type tearing tester to highly oriented materials, this would not necessarily impede the skilled person from performing the invention and obtaining a multilayer heat-shrinkable film according to the claimed invention (see Case Law of the Boards of Appeal, 9th edition 2019, II.C.5.5).

2.5 Finally, the factual situation underlying decision T 225/93, where three different measuring methods lead to different results, which amounted to an undue burden, is different from the present case in which one standardised test method and a preferred specimen are specified. The same is true for decision T 815/07 concerning the use of a new test method resulting in arbitrary values since the Elmendorf Tear value is not a new or arbitrarily defined parameter but based on a generally recognised and standardised test method.

2.6 In the light of the above, the board sees no reason to depart from the opposition division's finding that the patent discloses the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 83 EPC).

3. Main request, novelty

3.1 Based on established case law, it is a prerequisite for the acceptance of a lack of novelty that the claimed subject-matter is "directly and unambiguously derivable from the prior art". In other words, it has to be "beyond doubt - not merely probable - that the claimed subject-matter was directly and unambiguously disclosed in a patent document" (see Case Law of the Boards of Appeal of the European Patent Office, 9th edition 2019, I.C.4.1).

3.2 When contesting the novelty of a claim, the content of a prior-art document must not be treated as something in the nature of a reservoir from which features pertaining to separate embodiments may permissibly be drawn in order to artificially create a particular embodiment which would destroy novelty, unless the document itself suggests such a combination of features

(see T 450/89 and further decisions cited in Case Law of the Boards of Appeal of the European Patent Office, 9th edition 2019, I.C.4.2).

3.3 Document D1

Applying these principles to the case in hand, document D1 does not disclose a multilayer heat-shrinkable film. The passage cited by the appellant (see page 4, lines 16 to 20, of document D1) recites improved mechanical properties and thermal stability to orientation but does not disclose that the film *per se* is oriented. In addition, orientation is a prerequisite but not a sufficient condition for heat-shrinkability. Document D1 does not disclose the specific conditions for a film being heat-shrinkable. Therefore, feature [1] of claim 1 is not disclosed in document D1.

These reasons also apply to feature [9] of claim 9.

3.4 Document D3

Document D3 is directed to a multilayer, heat-shrinkable film (see page 7, lines 2 and 3; page 1, lines 6 to 9, and page 19, lines 9 to 12). However, it does not disclose feature [1.3], according to which "the ratio of the thickness of any of said microlayers to the thickness of said bulk layer" ranges "from about 1:2 to about 1:40".

The passage on page 16, lines 8 to 9, of document D3 relates to the thickness ratio with respect to the thicker microlayer in the sequence. It is not directly and unambiguously disclosed that any of said microlayers fulfils the claimed thickness ratio. Although document D3 does not exclude that all

microlayers have the same thickness - as brought forward by the appellant, this does not constitute a direct and unambiguous disclosure of feature [1.3].

In addition, the appellant cited several passages of document D3 for the thickness of the bulk layer (see page 16, lines 8 to 16; page 18, lines 25 to 29) and for the thickness of the microlayers (see page 13, lines 1 to 8), which allegedly disclose feature [1.3] when read in combination. The thickness of the bulk layer according to page 16 might be 50 %, 60 % or 80 % of the overall thickness of the structure being 15 to 30 μm , preferably 3 to 4 μm , or, according to page 18, it might be 20, 30, 50, 70, 100, 150, 200 μm or even more. On page 13, several preferred sub-ranges are mentioned for the thickness of the microlayers within the range from about 0.01 μm to about 5 μm . Although some combinations of these values would result in a thickness ratio falling within the claimed range of feature [1.3], the document does not contain a clear teaching to this effect. Since the skilled person would have to come up with a specific combination to arrive at the claimed thickness ratio, feature [1.3] of claim 1 cannot be considered to be directly and unambiguously disclosed in document D3 (see point 3.2 above).

For claim 9, the same arguments apply. Feature [9.5], which corresponds to feature [1.3], is thus not disclosed in document D3.

Additionally, features [9.5] and [9.8] are not anticipated by Example 5. Example 5, which relates to the quenched film of Example 1, has two intermediate adhesive layers (each having a thickness of 17.5 μm) positioned between the outer layers (outer layer b having a thickness of 75 μm and outer layer c having a

thickness of 87.5 μm) and the core sequence (consisting of 48 microlayers each having a thickness of 1.1 μm) (see Table II of document D3). To calculate the thickness ratio, the appellant had chosen an intermediate adhesive layer having a thickness of 17.5 μm as a bulk layer. Although the bulk layer of the patent in suit might be positioned between the microlayer structure and an outer bulk layer, the board is not persuaded that the intermediate adhesive layer of document D3 can be considered the bulk layer according to claim 9. First, document D3 explicitly mentions tie or adhesive layers as well as bulk and shrink layers (see page 18, lines 25 to 29). Equating an adhesive layer of document D3 with the bulk layer of feature [9.5] would thus go against the clear wording of document D3. Second, the intermediate adhesive layer of Example 5 has a much smaller thickness than the outer layer. For these reasons, the skilled person would not consider the intermediate adhesive layer of document D3 as the bulk layer but the outer layer b. Thus, considering the outer layer b of document D3 to be the bulk layer as per claim 9, the resultant thickness ratio according to feature [9.5] ($1.1 \mu\text{m} / 75 \mu\text{m} = 0.01467$) lies outside the claimed range of about 1:2 to about 1:40.

Furthermore, microlayers A, B, and C of Example 5 do not comprise a blend of two or more polymers (see page 27, lines 6 to 8, Table II). Hence, feature [9.8] of claim 9 is not disclosed in Example 5 of document D3.

3.5 In view of the above, the subject-matter of claims 1 and 9 is novel vis-à-vis documents D1 or D3 (Articles 52(1) and 54(1) EPC).

4. Main request, inventive step, combination of document D2 with document D1
 - 4.1 Both parties use document D2, which discloses a multilayer, heat-shrinkable film, as a starting point for discussing inventive step. It is common ground between the parties that the subject-matter of claim 1 of the main request differs from document D2 in features [1.2] to [1.5].
 - 4.2 The technical effect of these differences is mentioned in paragraph [0016] of the patent in suit. Compared to conventional shrink films, i.e. those that do not have a microlayer section, significant improvements in Elmendorf Tear are achieved and, therefore, shrink-films have less polymer usage while maintaining the properties.
 - 4.3 Starting from document D2 (see point 4.1) and taking into consideration the technical effect (see point 4.2), the objective technical problem to be solved is to provide a multilayer shrink film having good mechanical properties while using less polymer material. In the judgement of the board, the objective technical problem is not to be restricted to the improvement of tear resistance since including part of a solution offered by an invention in the statement of the problem necessarily results in an *ex post facto* view being taken on inventive step when the state of the art is assessed in terms of that problem.
 - 4.4 Turning to the claimed solution, the skilled person could have considered the teachings of document D1 because it is from the same technical field, namely packaging (see page 1, lines 7 to 16), and concerned with the improvement of the mechanical properties of

films (see page 2, lines 9 to 14). On page 4, lines 16 to 20, of document D1 the ability for improved biaxial or uniaxial orientation is mentioned. Although document D1 does not disclose an oriented or heat-shrinkable film *per se*, the skilled person is aware that orientation is a prerequisite for a film being heat-shrinkable and that the film disclosed in document D1 is particularly suitable for orientation.

However, the appellant could not persuade the board that the claimed subject-matter is obvious in the light of a combination of the teachings of documents D2 and D1. According to the appellant, the skilled person would replace the barrier layer of document D2 with the microlayer structure known from document D1. The board observes that the film disclosed in document D2 comprises three layers: a surface layer of polyester, an intermediate layer of a polyamide and a heat-sealing layer of a polyolefin (see document D2, page 2, lines 43 to 45). Documents D1 and D2 do not contain any incentive for the skilled person to replace one of these layers of document D2 with the microlayer structure disclosed in document D1. In view of this, the appellant's allegation that the skilled person would replace the barrier layer of document D2 with the microlayer structure known from document D1 is based on hindsight with knowledge of the invention. Even if the skilled person replaced the barrier layer of document D2 with the microlayer structure disclosed in document D1, as suggested by the appellant, it is not apparent that the resulting multilayer film would necessarily have the thickness ratio of feature [1.3], the film thickness of feature [1.4] and the Elmendorf Tear value of feature [1.5].

For these reasons, the subject-matter of claim 1 of the

main request is - regarding a combination of document D2 with document D1 - based on an inventive step (Articles 52(1) and 56 EPC).

4.5 These reasons also apply, *mutatis mutandis*, to the subject-matter of claim 9.

5. Admittance of the appellant's new lack of inventive step objection

5.1 At the oral proceedings, the appellant raised a new lack of inventive step objection based on document D1 alone.

5.2 According to Article 25(3) of the revised version of the Rules of Procedure of the Boards of Appeal (RPBA 2020, OJ EPO 2019, A63), where the summons to oral proceedings has been notified before its date of entry into force (i.e. 1 January 2020, see Article 24(1) RPBA 2020), Article 13(2) RPBA 2020 does not apply. Instead, Article 13 of the Rules of Procedure of the Boards of Appeal in the version of 2007 (RPBA 2007 - see OJ EPO 2007, 536, and EPC, 16th edition, June 2016, pages 601 to 629) continues to apply.

Article 13(1) RPBA 2007 stipulates that any amendment to a party's case after it has filed its grounds of appeal or reply may be admitted and considered at the board's discretion. The discretion has to be exercised in view of, *inter alia*, the complexity of the new subject-matter submitted, the current state of the proceedings and the need for procedural economy.

Article 13(3) RPBA 2007 specifies that amendments sought to be made after oral proceedings have been arranged shall not be admitted if they raise issues

which the board or the other party or parties cannot reasonably be expected to deal with without adjournment of the oral proceedings.

- 5.3 Applying these principles to the present case, the board exercised its discretion under Article 13(1) and 13(3) RPBA 2007 regarding the admittance of the appellant's new objection of lack of inventive step based on document D1 alone, since it had been raised for the first time at the oral proceedings before the board.

Although the lack of inventive step objection based on document D1 alone was raised at a very late stage of the appeal proceedings, it had to be taken in account that document D1 had already been thoroughly discussed in the context of novelty. In fact, the only new issue implied by the appellant's new objection was whether the film of document D1, if it were used for making a heat-shrinkable film as possibly suggested by on page 4, lines 16 to 20, of document D1, would inevitably comprise feature [1.5]. As the parties had already presented their arguments in this regard when novelty was discussed, the new objection of lack of inventive step did not increase the complexity of the case, nor was its admittance contrary to procedural economy, and nor did it require an adjournment of the oral proceedings.

For these reasons, the board, exercising its discretion under Article 13(1) and (3) RPBA 2007, decided to admit the new inventive step objection based on document D1 alone into the appeal proceedings.

5.4 Main request, inventive step, document D1 alone

The appellant put forward that the skilled person started from document D1 and used the film disclosed in it for producing a heat-shrinkable film. The core issue is whether this would inevitably or implicitly result in a film which includes feature [1.5], thereby rendering the subject-matter of claim 1 obvious.

Feature [1.5] is not an intrinsic feature of the multilayer heat-shrinkable film comprising the features [1] to [1.4]. Paragraph [0016] of the patent in suit discloses that significant improvements in Elmendorf Tear are achieved. Paragraph [0083] specifies that a majority of the films have an Elmendorf Tear value of "greater than 10 grams", i.e. not all the films have an Elmendorf Tear value "greater than 10 grams" as required by claim 1. Example 14 of the patent in suit (see paragraph [0124] and Table 3 of the patent in suit) exhibits features [1] to [1.4] but does not reveal an Elmendorf Tear value of "greater than 10 grams". Therefore, even if the skilled person used the film of document D1 for producing a heat-shrinkable film and thus arrived at a multilayered, heat-shrinkable film comprising features [1] to [1.4], the resulting film will not necessarily have an Elmendorf Tear value of "greater than 10 grams" as specified in feature [1.5]. The subject-matter of claim 1 is thus not rendered obvious by document D1 alone.

The same arguments apply *mutatis mutandis* for the subject-matter of claim 9.

- 5.5 For these reasons, the subject-matter of claim 1 and claim 9 of the main request is - regarding the teaching of document D1 - based on an inventive step (Articles 52(1) EPC and 56 EPC).
- 5.6 The patent as amended according to the main request meets the requirements of the EPC. Consequently, the appeal has to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



N. Schneider

P. Lanz

Decision electronically authenticated