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Datasheet for the decision of 9 July 2021

Case Number: T 2477/16 - 3.3.06

Application Number: 11721943.6

Publication Number: 2571690

IPC: B32B27/32, B65D65/40

Language of the proceedings: EN

Title of invention:
A COMPOSITION SUITABLE FOR STRETCH HOOD, METHOD OF PRODUCING THE SAME, AND ARTICLES MADE THEREFROM

Patent Proprietor:
Dow Global Technologies LLC

Opponent:
Borealis AG

Headword:
Stretch Hood Film/DOW

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - obvious modification (main request)
No objections raised (first auxiliary request)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

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Case Number: T 2477/16 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 9 July 2021

Appellant: (Opponent)	Borealis AG IZD Tower Wagramerstrasse 17-19 1220 Wien (AT)
Representative:	Lux, Berthold Maiwald Patentanwalts- und Rechtsanwaltsgesellschaft mbH Elisenhof Elisenstraße 3 80335 München (DE)
Respondent: (Patent Proprietor)	Dow Global Technologies LLC 2040 Dow Center Midland, MI 48674 (US)
Representative:	Boult Wade Tennant LLP Salisbury Square House 8 Salisbury Square London EC4Y 8AP (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 28 October 2016 rejecting the opposition filed against European patent No. 2571690 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	J.-M. Schwaller
Members:	R. Elsässer
	S. Fernández de Córdoba

Summary of Facts and Submissions

I. The appeal of the opponent lies against the decision of the opposition division to reject the opposition against European patent EP 2 571 690, claim 1 thereof reading as follows:

"1. A multi-layer film having a thickness of at least 76.2 µm (3 mils) comprising at least one inner layer and two exterior layers, wherein the inner layer comprises at least 50 weight percent polyethylene copolymer having a melt index less than 2 grams/10 minutes, a density less than or equal to 0.910 g/cm^3, a total heat of fusion less than 120 Joules/gram and a heat of fusion above 115°C of less than 5 Joules/gram, wherein the total heat of fusion of the inner layer is less than the heat of fusion of either of the two exterior layers, and wherein the multi-layer film has an elastic recovery of at least 40% when stretched to 100% elongation."

II. With the grounds of appeal the appellant requested to set aside the decision *inter alia* because claim 1 as granted lacked inventive step over D7 (WO 2005/014672 A2) taken alone (Article 100(a) and 56 EPC).

III. With its reply the proprietor (also respondent) refuted this objection and submitted six auxiliary requests.

IV. Following the board's preliminary opinion that the subject-matter of claim 1 as granted appeared to lack an inventive step over D7, the respondent filed with submission dated 18 September 2020 several auxiliary requests including an auxiliary request 7.

V. At the oral proceedings before the board the respondent made said auxiliary request 7 its new first auxiliary request and the final requests of the parties were as follows:

- The appellant requested that the decision under appeal be set aside and mentioned that it had no objection against the maintenance of the patent in amended form on the basis of new auxiliary request 1.

- The respondent requested that the appeal be dismissed, and as an auxiliary measure, that the patent be maintained in amended form based on auxiliary request 1.

Reasons for the Decision

1. Main request - Inventive Step (Article 56 EPC)

Claim 1 as granted does not involve an inventive step over D7 taken alone for the following reasons:

1.1 The invention concerns a multilayer film useful for stretch hood applications (par. [0004] of the description and claim 1 of the patent in suit).

1.2 There was agreement between the parties and the board that D7 represents the best starting point for the assessment of inventive step, as this document relates (see paragraph [0001]) to multilayered films based on ethylene copolymers and suitable for stretch hood packaging (D7, paragraphs [0002] and [0003]), i.e. the same purpose as the films of the patent in suit.

D7 furthermore has the most relevant technical features in common with the claimed subject-matter, since in its specific embodiments exemplified in table 10, the multilayer film used for stretch hood packaging is described as having a thickness of from 50 to 200 µm (80 to 150 µm in the specific examples) and consisting of:
- a core layer consisting of 50-100% of an EVA polymer and up to 50% (in the specific examples 0 to 30%) of the commercially available polyethylene copolymer EXACT 0201 (melt index: 1.1 g/10 min; density: 0.902; total heat fusion: 86 J/g), and
- skin layers made of the polymers EXCEED 1018 CA and/or EB, which both have a heat of fusion of 127.5 J/g, and the resultant multilayered films have a measured elasticity recovery of 50 to 53% in the examples.

D7 does not explicitly disclose a heat of fusion above 115°C for the polymer EXACT 0201, but the measurements carried out by the respondent (see experimental report Dll, table 1) show that it is largely below the value of 5 J/g required in claim 1 as granted. The board notes that the values for the total heat of fusion of EXACT 0201 reported in D7 and in experimental report D11 differ slightly but both values are well within the claimed range of less than 120 Joules/gram.

It is undisputed that the films of examples 2-7 of D7 (see tables 10 and 12) comprise only a maximum of 30% of EXACT 0201 in their core layers, and so an amount of polyethylene polymer lower than the value of "at least 50%" recited in claim 1.

1.2.1 The appellant has pointed out that the column labeled "Range" in table 10 of D7 disclosed films having a core layer comprising 50 wt% of polyethylene polymer.

1.2.2 The board notes however that no concrete film having 50% PE in the core layer is exemplified in D7 and that for such films only a range of a potential thickness of from 50 to 200 µm is disclosed. Therefore the board concurs with the respondent that the assessment of inventive step should start from one of the concrete examples 3-6 from which the subject-matter of claim 1 is de facto distinguished solely by the content of the polyethylene polymer, namely 50 wt.% or more.

1.3 According to the patent in suit (par. [0004], [0005], [0007]) the invention provides polymers useful as stretch hood films, with par. [0032] and [0040] mentioning certain positive effects of said films. Based on these passages and the experimental report D11, the respondent defined the problem underlying the alleged invention in a generic way, namely as the provision of a film having improved properties for stretch hood applications, in particular improved elastic recovery, Elmendorf tear strength, tensile strength, puncture resistance and Dart B drop impact strength.

1.3.1 The board notes that the films 3, 4, 7, 8 according to experimental report D11 have a content of 70 or 100 wt. % of polyethylene polymer, thus casting doubt as to whether the effects shown in D11 are proven over the entire claimed range, and so also for films having only 50 wt.% of polyethylene polymer. The board however notes that, even if accepting that the effects reported in D11 were satisfied over the entire range claimed, only an improvement of the Elmendorf tear strength (MD) can be retained for the formulation of the problem to be solved for the following reasons:

1.3.2 In D11, Examples 3, 4, 7 and 8 show that, vis-à-vis examples 1, 2, 5 and 6, which are representative of the films of D7, an increased content of polyethylene polymer leads to an increase of the Elmendorf tear strength (MD). Such an improvement being also defined in par. [0040] of the patent as an effect underlying the alleged invention, it can be used in the formulation of the problem to be solved.

1.3.3 With regard to the tensile strength, the board notes that according to established jurisprudence, only effects that are derivable from the patent can be used in the formulation of the problem to be solved. This condition is however not met for this property since no such improvement is mentioned in the patent, in particular in par. [0032] and par. [0040] relied upon by the respondent.

1.3.4 In contrast, an improvement of the elastic recovery is clearly envisaged in par. [0040] of the patent, but the the experimental results provided in tables 4 and 5 of D11 show that three out of four films representative for the closest prior art D7 (films 1, 2 and 5) already have elastic recoveries well above 40%, so that this property cannot be used in the formulation of the problem solved either.

1.3.5 Concerning the Dart B drop impact strength, the board also fails to see a consistent improvement as for comparative example 5, the measured value is the same as for the inventive examples 7 and 8.

1.3.6 The effect of an improved puncture resistance can neither be used in the formulation of the problem to be solved since it cannot be derived from the patent in suit. The respondent has referred to par. [0032] of the

patent, where an improvement of the dynamic puncture resistance was mentioned, but this passage relates manifestly to a specific embodiment of the invention and not to the invention as claimed. Moreover, as pointed out by the appellant, the puncture resistance values in D11 were measured using a special proprietary test method that is not disclosed in the patent, and it is not clear wether the puncture resistance measured in D11 corresponds to the *dynamic* puncture resistance mentioned in par. [0032]. The board concludes that improvements in terms of the puncture resistance cannot be used in the formulation of the problem solved.

1.3.7 It follows that the problem as formulated by the respondent is unsuitable since it is based in part on effects that are either not proven over the closest prior art or not derivable from the patent. For the board the objective problem to be solved over D7 is therefore to be seen in the provision of a film having an improved Elmendorf tear strength (MD).

1.3.8 In view of the examples provided in the patent in suit and in experimental report D11, this problem can be seen as having effectively been solved.

1.4 As to the question whether the solution as proposed in the claimed subject-matter is inventive over the film known from D7, the board has come to the conclusion that it would have been obvious for the skilled person to increase the content of polyethylene polymer in the core layer to improve the Elmendorf tear strength since the data disclosed in table 12 of D7 point in this direction as follows:

- the films of examples 1, 2 and 7, which contain no or little (15 %) polyethylene polymer, have

Elmendorf tear strengths of 12.4, 12.1 and 11.3 g/µm, while

- those of examples 3-6, which contain 30 % of polyethylene polymer have higher tear strengths of 13.5, 15.3, 15.3 and 12.5 g/µm,

thus suggesting to the skilled person that there is at least a reasonable chance of improving the Elmendorf tear strength by further increasing the content of polyethylene in the core layer.

As the column defining the range in Table 10 discloses that the core layer can comprise up to 50 wt.% of polyethylene polymer, it follows that the skilled person would at least be prompted to produce a film having a core layer comprising 50 wt.% of said polymer, namely of EXACT 0201, in order to improve the Elmendorf tear strength.

1.4.1 The respondent has argued that the skilled person would not change the content of EXACT 0201 in the core layer since the elastic recovery data of films 7 and 5 (containing respectively 0% and 30% of EXACT 0201) were the same, so that no improvement in this property could be expected. Moreover, a comparison of examples 6 and 7 even suggested that an increase of the content of EXACT 0201 in the core layer had a negative impact on the elastic recovery.

1.4.2 The board does however not see that it can be derived from the data of table 12 that an increase in the amount of EXACT 0201 reduces the elastic recovery. Rather, the data suggest that the elastic recovery properties are independent from the content of EXACT 0201 in the core layer. Hence the skilled person would learn from these data that the content of EXACT 0201

could be increased in order to improve the Elmendorf tear strength, without risking to negatively impact the elastic recovery properties.

1.4.3 As regards the puncture force results reported in table 12 of D7, the board notes that the values of examples 1-7 do not follow a clear trend other than being consistently higher than the corresponding values of the comparative examples, so that the skilled person would not be discouraged from further increasing the content of EXACT 0201 in order to increase the Elmendorf tear strength.

1.5 It follows from the above that for the skilled reader of D7, the subject-matter of claim 1 at issue is derivable therefrom in an obvious manner, and so does not involve an inventive step within the meaning of Article 56 EPC.

2. New first auxiliary request

As the appellant had no objection against the sole claim of this request, reading:

"*1. A stretch hood film structure formed from a multi-layer film having a thickness of at least 76.2 µm (3 mils) comprising at least one inner layer and two exterior layers, wherein the inner layer comprises at least 50 weight percent polyethylene copolymer having a melt index less than 2 grams/10 minutes, a density less than or equal to 0.910 g/cm3, a total heat of fusion less than 120 Joules/gram and a heat of fusion above 115°C of less than 5 Joules/gram, wherein the total heat of fusion of the inner layer is less than the heat of fusion of either of the two exterior layers, and wherein the multi-layer film has an elastic recovery of*

at least 40% when stretched to 100% elongation; wherein the polyethylene copolymer of the inner layer is characterized by a Comonomer Distribution Constant greater than about 45 and as high as 400, and wherein the polyethylene copolymer has less than 120 total unsaturation unit/1,000,000C.",

the board does not see *prima facie* any reason to investigate the case at its own motion, and therefore to doubt that the request at hand fulfils the requirements of the EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent in amended form on the basis of the claims of auxiliary request 1 (formerly filed as auxiliary request 7 with letter dated 18 September 2020) and a description to be adapted thereto.

The Registrar: The Chairman:

A. Pinna J.-M. Schwaller

Decision electronically authenticated