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Datasheet for the decision of 22 March 2007

Case Number: T 0378/05 - 3.3.09

Application Number: 00300477.7

Publication Number: 1022131

IPC: B32B 27/32

Language of the proceedings: EN

Title of invention:
Low-noise stretch film

Patentee:
Mima Films s.c.a.

Opponent:
DUO-Plast A.G.

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
"Novelty (main request and first auxiliary request - no)"
"Inventive step (second auxiliary request - yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0378/05 - 3.3.09

D E C I S I O N
of the Technical Board of Appeal 3.3.09
of 22 March 2007

Appellant: (Opponent)
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Decision under appeal:
Decision of the Opposition Division of the European Patent Office orally announced 16 December 2004 and posted 4 February 2005 rejecting the opposition filed against European patent No. 1022131 pursuant to Article 102(2) EPC.

Composition of the Board:

Chairman: J. Jardón Álvarez
Members: W. Ehrenreich
K. Garnett

Summary of Facts and Submissions

I. The grant of European patent No. 1 022 131 in respect of European patent application No. 00 300 477.7 in the name of Mima Films s.c.a., which had been filed on 21 January 2000, was announced on 13 November 2002 (Bulletin 2002/46) on the basis of 12 claims.

Claims 1 read as follows:

"1. A multilayer blown stretch film comprising a first layer having cling properties and consisting essentially of a copolymer of ethylene and a C_{4-8} α-olefin, the copolymer having a density in the range of 0.850 to 0.890 g/cm^3, and a second layer having substantially no cling properties to a layer of itself and comprising at least 70 wt.% of a branched low density polyethylene having a branch chain length of greater than 6 carbon atoms and having a density in the range 0.924 to 0.940 g/cm^3."

II. A notice of opposition was filed against the patent by DUO-Plast A.G. on 5 August 2003. The Opponent requested the revocation of the patent in its full scope based on Article 100(a) EPC, due to lack of novelty and inventive step.

The opposition was supported *inter alia* by the following documents:

D1: WO - A - 96/29203 and

D3: WO - A - 95/15851

III. By its decision announced orally on 16 December 2004 and issued in writing on 4 February 2005, the Opposition Division rejected the opposition.

The Opposition Division acknowledged the novelty of the subject-matter of the granted claims over D1. The Opposition Division considered the subject-matter, directed to films comprising at least 70 wt% of a low density polyethylene (LDPE) having a density in the range of 0.924 to 0.940 g/cm^3, to be a selection within the generally accepted density range for LDPE of 0.915 to 0.940 g/cm^3. The selected range was considered to fulfil the criteria for selection inventions.

Concerning inventive step, the Opposition Division considered D1 representative of the closest prior art and saw the problem to be solved as how to achieve a further reduction in unwind noise as well as avoiding the use of anti-block additives in the slip layer. The solution to this problem, namely the claimed films, was in its opinion non-obvious for the skilled person and therefore inventive.

IV. On 24 March 2005 the Opponent (Appellant) lodged an appeal against the decision of the Opposition Division and paid the appeal fee on the same day.

In the Statement of Grounds of Appeal filed on 8 June 2005, the Appellant requested the revocation of the patent in its entirety on the grounds of lack of novelty and inventive step (Article 100(a) EPC).

V. The Respondent (Patent Proprietor) presented its counter-statement in a written submission dated 23 September 2005, and defended the patent as granted.

VI. On 20 December 2006 the Board dispatched the summons to attend oral proceedings. In the annexed communication pursuant to Article 11(1) of the Rules of Procedure of the Boards of Appeal, the Board drew the attention of the parties to the points to be discussed during the oral proceedings.

VII. By letter dated 21 February 2007 (and corrected on 7 March 2007), the Appellant filed further arguments in support of its objections of lack of novelty and lack of inventive step. It also filed an experimental report in support of its arguments:

D10: Comparative experiments by Mr Jäger dated 12 July 2006.

VIII. With a letter dated 22 February 2007, the Respondent filed two auxiliary requests in case the Board decided not to allow the granted claims according to the main request. It also filed an experimental report in support of its arguments:

D9: Experimental report, supervised by Mr Maka, filed with letter dated 22 February 2007.

Claim 1 of the first auxiliary request differed from Claim 1 of the main request in that the density range of the low density polyethylene in the second layer was limited to "0.924 to 0.932 g/cm^3".

Claim 1 of the second auxiliary request was amended to exclude the presence of antiblock additives.

IX. During the oral proceedings held on 22 March 2007, the Respondent withdrew its previous second auxiliary request and filed an amended second auxiliary request and a third auxiliary request. In these requests the expression "essentially free", which was present in its previous second auxiliary request, was now precisely defined.

Claim 1 of the new second auxiliary request reads:

"1. A multilayer blown stretch film comprising a first layer having cling properties and consisting essentially of a copolymer of ethylene and a C_{4-8} α-olefin, the copolymer having a density in the range of 0.850 to 0.890 g/cm^3, and a second layer having substantially no cling properties to a layer of itself and comprising at least 70 wt.% of a branched low density polyethylene having a branch chain length of greater than 6 carbon atoms and having a density in the range 0.924 to 0.940 g/cm^3, wherein the film contains less than 100 ppm of cling and/or anti-cling additives."

X. The arguments presented by the Appellant in its written submissions and at the oral proceedings may be summarized as follows:

– The subject-matter of Claim 1 of the main and the first auxiliary request lacked novelty having regard to the disclosure of D1. The claimed subject-matter fell within the scope of the disclosure of D1 and

lacked novelty because it did not fulfil the criteria for a selection invention, namely that the selected range should be narrow, far removed from the preferred part of the known range and not arbitrary.

– Concerning the second auxiliary request, the Appellant acknowledged the novelty of Claim 1 of this request but considered that it did not involve an inventive step.

– The Appellant considered that the problem underlying the patent in suit, namely the provision of films having a low noise level during unwinding, was not credibly solved throughout the claimed range. The Appellant pointed out that some of the films covered by the claims showed a higher noise level than those of D1. Moreover, the experimental evidence filed by the Appellant showed clearly that other factors were also responsible for the reduction of noise, such as the thickness of the layers.

– But even if it could be accepted that the problem had been solved, the solution lacked an inventive step having regard to the combined teaching of documents D1 and D3. It was clear from examples 3 and 4 of D1 that by using a lower amount of antiblock additive the noise level could be reduced and it was known from D3 that the cling properties of the film were related to the density of the polymer used. It would thus have been obvious for the skilled person to combine these teachings in order to arrive at the claimed solution.

XI. The arguments presented by the Respondent may be summarized as follows:

– The claimed subject-matter was a multiple selection within the teaching of D1 and fulfilled the novelty criteria for selection inventions. Novelty was given by the combination of three separate selections: blown film as opposed to cast film, the requirement that the amount of LDPE should be greater than 70 wt.% and the density range of the LDPE. The Respondent pointed out that the selected density range was narrow because most of the commercially available LDPE had a density outside the claimed range. Moreover, combinations of selections made resulted in an improved unwind noise.

– Concerning inventive step, the Respondent pointed to the drawbacks of the prior art films during manufacture due to the presence of antiblock additives. The problem to be solved by the patent in suit was to reduce unwind noise without the need for an antiblock additive. The solution to the problem involving the use of a LDPE of a density within 0.924 and 0.940 g/cm^3 was surprising having in mind that the use of antiblock additives was an essential feature of the films of D1.

XII. The Appellant requested that the decision under appeal be set aside and that the European patent No 1 022 131 be revoked.

The Respondent requested that the appeal be dismissed, alternatively that the decision under appeal be set aside and the patent be maintained on the basis of the

first auxiliary request filed with the letter dated 22 February 2007, alternatively on the basis of the second auxiliary request filed during the oral proceedings.

Reasons for the Decision

1. The appeal is admissible.

Main Request

2. *Novelty (Article 54 EPC)*

2.1 The novelty of Claim 1 of the main request has been contested by the Appellant having regard to the disclosure of D1.

2.2 Claim 1 of the main request is directed to a multilayer blown stretch film comprising:

(i) a first layer having cling properties and consisting essentially of a copolymer of ethylene and a C_{4-8} α-olefin having a density of 0.850 to 0.890 g/cm^3,and

(ii) a second layer having no cling properties and comprising at least 70 wt.% of a branched low density polyethylene having a branch chain length of greater than 6 carbon atoms and having a density in the range of 0.924 to 0.940 g/cm^3.

2.3 Document D1 discloses in Claim 1 a stretch wrap plastics film having (i) on one side, a cling layer

comprising a polymer of ethylene of ultra low density (ULDPE); and (ii) on the other side, a slip layer comprising a low density (high pressure) polyethylene (LDPE) comprising a solid particulate antiblock.

Claim 15 of D1 is directed to the film of Claim 1 which is a blown film.

2.4 It is not disputed that the first layer of the film of Claim 1 corresponds to the cling layer of D1, having preferably a density from to 0.860 to 0.890 g/cm^3 (D1, page 2, lines 14 to 19). The cling layer is therefore not a distinguishing feature.

2.5 Concerning the second layer having the property of not clinging to a layer of itself, that is to say, the slip layer, it is noted that what is meant in D1 by LDPE is a homopolymer of ethylene prepared using a free-radical initiator and high polymerisation pressure. Such polymers are said to be readily available commercially (page 3, lines 1 to 5). Although D1 does not specify the range of density of the LDPE used, it is within the knowledge of the skilled person that LDPE, also known as high pressure polyethylene, defines a product having a density between 0.915 and 0.940 g/cm^3. This density range, which is mentioned in the decision under appeal as generally accepted in the field, is confirmed by textbooks like Kirk-Othmer, Encyclopedia of Chemical Technology, fourth edition, Volume 17, page 708, second full paragraph.

In the examples of D1, LDPE having a density of 0.921 g/cm^3 is used. The LDPE in D1 may be blended with another olefin polymer and in that case it comprises

preferably at least 60 wt% of the olefin polymer material (Claims 5 - 7).

2.6 There are therefore two possible "differences" between the films disclosed in D1 and those according to Claim 1 of the patent in suit:

(a) according to D1, commercially available LDPE without specification of the density but within a generally accepted range of "0.915 to 0.940 g/cm^3" is used while in Claim 1 a density range between "0.924 and 0.940 g/cm^3" has been selected; and

(b) according to D1 the slip layer comprises "at least 60 wt% of LDPE", the corresponding amount according to Claim 1 being "at least 70 wt% of LDPE".

2.7 To qualify as a novel selection according to the criteria applied by the Boards of Appeal (see Case Law of the Boards of Appeal of the European Patent Office 5th edition 2006, page 96), the following conditions must be met:

(i) the selected sub-range should be narrow;

(ii) the selected sub-range should be sufficiently far removed from the known range illustrated by means of examples; and

(iii) the selected area should not provide an arbitrary specimen from the prior art, but another invention (purposive selection).

2.8 None of the possible "differences" mentioned above, taken alone or in combination, is able to qualify as a novel selection.

– The selected sub-ranges represent in both cases more than 50% of the original range disclosed in D1. The selection of more than half of the known range cannot qualify as narrow.

– In examples 3 to 9 of D1, LDPE having a density of 0.921 g/cm^3 in an amount of ca 100% is used. This density value is very close to the lower value of the range of Claim 1 and the amount of LDPE falls within the range of Claim 1. Therefore, the selected sub-ranges are not far removed from the examples of D1.

– No unexpected effect indicative of a purposive selection has been shown for the embodiments covered by Claim 1 embracing the use of antiblock additives in relation with the selected sub-ranges. Thus, the selected sub-ranges represent an arbitrary selection within the teaching of D1.

As none of the above mentioned criteria is fulfilled, the claimed range cannot be considered as new.

2.9 The Board cannot accept the arguments of the Respondent that the novelty lies in a combination of three separate selections, namely blown film as opposed to cast films, the inclusion of more than 70 wt% of LDPE and the selection of LDPE of a given density, and that the examples in the patent show an improved unwind noise as the result of the selections made.

First of all, it is noted that the choice of a blown film is not a selection within the teaching of D1, which already claims blown films (see Claim 15). The fact that the films exemplified in D1 are cast films does not limit the teaching of this document to the exemplified cast films.

The fact that in the examples of D1 LDPE of a density slightly below that of the density range now claimed is used does not limit the teaching of D1 to such LDPE. The skilled person would seriously contemplate the use of LDPE of a higher density which is fully within the scope of the whole disclosure of D1. There is nothing in D1 which would dissuade the skilled person from applying the technical teaching of D1 within its whole claimed range.

Concerning the alleged effect of an improved unwind noise over the films of D1, it is noted that the embodiments of Claim 1 which are anticipated by D1 are those including the use of an antiblock additive. No information has been filed by the Respondent concerning films having a density within the range of Claim 1 and comprising an antiblock additive. In the absence of such information no unexpected effect can be acknowledged for such subject-matter.

2.10 For these reasons the subject-matter of Claim 1 of the main request is anticipated by the disclosure of D1.

First Auxiliary Request

3. *Novelty (Article 54 EPC)*

3.1 The subject-matter of Claim 1 of the first auxiliary request has been limited to a density range of 0.924 to 0.932 g/cm^3.

The upper limit of the range has thus been reduced from 0.940 to 0.932 g/cm^3 making the claimed range "narrower" compared to the main request. It now embraces approximately one third of the known density range for LDPE.

Independently of the question whether the range is now "narrow enough" to fulfil the first criteria of a selection invention, the Board notes that there is no evidence of any improvement as a result of this limitation and consequently it has to be considered as an arbitrary selection. The skilled person would in any case also seriously contemplate working within the range now claimed.

For these reasons the reasoning given above for the main request also applies *mutatis mutandis* to the first auxiliary request.

3.2 The subject-matter of Claim 1 of the first auxiliary request is not novel within the meaning of Article 54 EPC.

Second Auxiliary Request

4. *Amendments (Article 123 EPC).*

4.1 Claims 1 and 8 of the second auxiliary request have been amended to specify that "the film contains less than 100 ppm of cling and/or anti-cling additives" in accordance with the disclosure on page 7, lines 5 to 8 of the application as originally filed (Article 123(2) EPC).

4.2 Granted Claim 6 has been deleted and Claims 7 to 12 have been renumbered accordingly.

4.3 The amendments made clearly limit the scope of the claims and - as uncontested by the Appellant - also fulfil the requirements of Article 123(3) EPC.

5. *Novelty (Article 54 EPC)*

5.1 The subject-matter of Claim 1 of this request has been limited to films wherein the possible amount of cling and/or anti-cling additives is less than 100 ppm. By this limitation novelty has been established over D1, where amounts above 100 ppm are required (see Claims 9 and 10).

5.2 The Appellant acknowledged the novelty of the subject-matter of the claims of the second auxiliary request during the oral proceedings and consequently no further comments are necessary.

6. *Inventive step (Article 56 EPC)*

6.1 The patent in suit relates to blown stretch wrap films which generate low noise in use. In paragraph [0024] of the patent, it is pointed out that the films according to the invention are essentially free of additives like slip and antiblock agents, which means that these additives, if present, are contained in an amount of less than 100 ppm.

6.2 Closest prior art

6.2.1 The Board considers, in agreement with the parties and the Opposition Division, that the closest prior art is represented by D1.

6.2.2 As already discussed above in relation to novelty, D1 also relates to stretch wrap films which generate low noise in use (see Claim 17). In D1, unwind noise in stretch wrap films is reduced by using a non-cling layer comprising LDPE and a solid particulate antiblock additive desirably in an amount of 100 to 10 000 ppm (see Claim 1 in conjunction with page 3, lines 21 to 23). The use of the additive allows a reduction of the unwind noise, as demonstrated by the examples and comparative examples in D1.

6.2.3 According to the introduction to the present specification, [0005], when antiblock additives are used they may be present at the surface of the film during film manufacture and usage, causing some undesirable build-up on equipment, necessitating stoppage for cleaning. Some antiblock additives also

weaken the film, leading to premature film fracture, and may also detract from film clarity.

6.3 The objective problem to be solved and its solution

6.3.1 The technical problem to be solved by the patent in relation to said prior art can thus be formulated as the provision of an alternative stretch wrap film which also generates low noise in use without using effective amounts of antiblock additives.

6.3.2 This problem is solved by the films of Claim 1 by using a LDPE having a density in the range of 0.924 to 0.940 g/cm^3, which allows omission of anti-cling additives.

In this context it is noted that although Claim 1 still allows the presence of a small amount of additive (less than 100 ppm), the claimed films can be considered as substantially free of additives because this amount has no appreciable effect on the properties of the film, as explained in paragraph [0024] of the specification. All the examples in the specification have been made without using additives and the limitation to less than 100 ppm has been introduced to ensure novelty over the disclosure of D1. It means that films having an accidental amount of residual additives such that they lack any antiblock effect are not excluded from the scope of the claims.

6.3.3 In the light of the experimental evidence on file, the Board is satisfied that the above-defined technical problem is plausibly solved.

The examples in the patent show that films prepared using a LDPE having a density within the claimed range and lacking antiblock additives have low unwind noise. The further comparative examples provided by the Respondent, D9, show that films having similar unwind noise to those of D1 can be prepared without antiblock additives by varying the density of the LDPE. Thus Films 2 and 3, with respective densities of 0.924 and 0.930 g/cm^3, have a reported noise level of 89-90 and 79-81 dB, similar to that of Film 4, which corresponds to an embodiment of D1 using LDPE of 0.921 g/cm^3 and including 1800 ppm silica (antiblock) and having an unwind noise of 84dB. Film 1 of D9 further shows that such reduction of unwind noise level cannot be achieved by using LDPE of a density outside the claimed range.

6.4 The Appellant denied that the problem had been credibly solved throughout the whole of the claimed range. It relied mainly on the comparison of Films 2 and 4 of D9 and on its experimental evidence filed with the letter dated 21 February 2007, D10. In its opinion the problem was not solved because some films covered by the patent showed a level of noise higher than the prior art films. Moreover, not only the density but also other factors such as the thickness of the film layers were relevant for the solution of the problem and these features were not recognized in the patent in suit.

6.5 The Board cannot accept these arguments of the Appellant because the experiments on which the Appellant relies do not support its opinion.

It is noted that most of the experiments of D10 do not allow a fair comparison, as several parameters have

been changed. Insofar as the experiments of D10 can be compared, they actually confirm the results of the patent. Thus noise level decreases from 79.2 dB in sample 4 of D10, a film prepared with LDPE of a density below the range claimed, to 74.0 dB in sample 7, a film according to the patent in suit.

It is however not possible to compare sample 3 of D10, the only film in the experiments representing an embodiment according to D1, with samples 5 to 7, representing films according to the patent in suit, because the compared films differ not only in the absence of antiblock additive and/or the density of the LDPE used, but also in the thickness of the slip layer. Therefore they are not directly comparable. But even if a comparison is made, the noise level reported for samples 5 to 7 (81.2, 81.4 and 80.5dB) is similar to the noise level of sample 3 (81.6 dB), showing that the films are viable alternatives to the films of D1.

Also the argument that other factors might also play a role in the noise level is irrelevant for the claimed subject-matter. The question to be decided here is whether the density has an effect on unwind noise. The experimental evidence submitted by both parties as discussed above confirms such finding.

6.6 Obviousness

6.6.1 It remains to be decided whether, in view of the available prior art documents; it would have been obvious for the skilled person that anti-cling additives can be omitted by using LDPE of a density in the range of 0.924 to 0.940 g/cm^3.

6.6.2 There is no hint to this solution in the available prior art. D1 actually teaches away from the present invention because the use of antiblock additives in the films is said to be essential.

6.7 This teaching of D1 was questioned by the Appellant during the oral proceedings in view of the results of examples 3 and 4 in D1. The Appellant noted that in example 4, where 1500 ppm of talc was used as antiblock additive, a lower noise was measured than in example 3, where 3000 ppm was used, and concluded that the skilled person would interpret these examples as an indication that by reducing the amount of additive the noise level could also be reduced.

6.8 This is a misinterpretation of the teaching of D1. As already stated above, the only clear teaching of D1 is the use of an additive, preferably in amounts of 500 to 2500 ppm (see Claim 10). The skilled person would never consider using the results of two single examples to extract a teaching in the document contrary to its whole disclosure. The improvement in example 4 is easily explained by the fact that this example is carried out using the preferred amount of antiblock additive (cf. Claim 10, 500 to 2500 ppm), while in example 5 the amount is slightly above this preferred range. Moreover the "effect" pointed out by the Appellant in examples 3 and 4 is not corroborated by the other examples in D1 (cf. examples 5 and 6).

6.9 There is also no hint to the claimed films in the other document, D3, cited by the Appellant. D3 aims to provide stretch wrap films having substantial, one-

sided cling properties without the use of functional polymers such as ethylene methacrylate copolymers or low molecular weight tackifiers such as polyisobutylene (page 1, lines 4 to 9). In D3 no reference is made to noise or its reduction and consequently the skilled person would not find any hint to the use of the selected density range for improving the noise level of the films of D1.

The Appellant argued that there was such a hint in the paragraph bridging pages 9 and 10 of D3. According to this paragraph the amount of cling relates to the density of the polymer or blend combination and cling properties improve as the density of the polymer in the cling layer is decreased (page 9, lines 24 to 27). This passage, however relates to the effect in the cling layer and not in the non-cling layer as in Claim 1 of the patent in suit. The densities of the non-cling layer overlap in part with those of Claim 1 but there is no indication in D3 that the now-selected range would result in improved non-cling properties and/or noise level.

Taking account of these facts, namely that D3 does not deal with the problem of noise level and that the preferred density ranges of D3 include embodiments where no reduction of noise level is achieved; the skilled person would not combine the teaching of D3 with the teaching of D1 in order to arrive at the claimed subject-matter.

6.9.1 Thus, the finding that the use of LDPE having a density in the range of 0.924 to 0.940 g/cm^3 results in films having acceptable noise levels without the use of

antiblock additives is not a teaching the skilled person, being confronted with the task of finding a solution to the problem underlying the patent in suit, would derive from the available prior art.

6.9.2 Hence the Board finds that the subject-matter of Claim 1 is not obvious in view of D1 alone or in combination with D3.

7. The subject-matter of dependent Claims 2 to 7, which relates to particular embodiments of the films according to Claim 1, as well as the subject-matter of Claims 8 to 11, which relate to its preparation or use, is also novel and involves an inventive step.

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 on the basis of Claims 1 to 11 according to the second auxiliary request filed during the oral proceedings, after any necessary consequential amendment of the description.

The Registrar: The Chairman:

C. Moser J. Jardón Álvarez