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**Datasheet for the decision
of 2 July 2013**

Case Number: T 0479/11 - 3.3.09

Application Number: 02786396.8

Publication Number: 1436145

IPC: B32B 27/32

Language of the proceedings: EN

Title of invention:

Polyolefin film for use in cold seal cohesive applications

Patent Proprietor:

TORAY PLASTICS (AMERICA), INC.

Opponent:

AVERY DENNISON CORPORATION

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56

Keyword:

"Main request allowable"

"Novelty (yes) functional feature belongs to the common
general knowledge"

"Inventive step (yes) non-obvious solution"

Decisions cited:

-

Catchword:

-



Case Number: T 0479/11 - 3.3.09

D E C I S I O N
of the Technical Board of Appeal 3.3.09
of 2 July 2013

Appellant/Respondent: TORAY PLASTICS (AMERICA), INC.
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
28 December 2010 concerning maintenance of
European patent No. 1436145 in amended form
(Article 101 (3) (a) EPC).

Composition of the Board:

Chairman: W. Sieber
Members: N. Perakis
K. Garnett

Summary of Facts and Submissions

I. Mention of the grant of European patent No. 1 436 145 in the name of Toray Plastics (America) Inc. was published on 4 January 2006 (Bulletin 2006/01). The patent was granted with 19 claims, claim 1 reading as follows:

"1. A polyolefin multilayer film comprising a polyolefinic core layer, and a first polyolefin skin layer, adjacent to the core layer, **providing a cold seal receptive surface for a cold seal adhesive**, wherein the first polyolefin skin layer does not contain a thermoplastic or natural rubber, characterized in that the first polyolefin skin layer comprises a blend of an ethylene propylene random copolymer at 50-90 wt.% of the skin layer and metallocene catalyzed plastomer at 10-50 wt.% of the skin." (emphasis added)

II. An opposition was filed by Avery Dennison Corporation requesting revocation of the patent in its entirety on the grounds that the granted subject-matter was neither novel nor inventive (Article 100(a) EPC) and that the subject-matter of the patent extended beyond the content of the application as filed (Article 100(c) EPC).

The following documents were *inter alia* filed by the opponent:

D1: EP 0 575 465 B1;

D4: Ullmann's Encyclopedia of Industrial Chemistry, Sixth, Completely Revised Edition, volume 14, Wiley-VCH, p 718;

D9: Test report "Cold Seal Adhesive Evaluations".

The patent proprietor filed following documents in support of its arguments:

D7: First declaration of Keunsuk P. Chang, dated 22 March 2007;

D11: Second Declaration of Keunsuk P. Chang dated 20 October 2010, which makes reference to the following additional document:

D10: US 5 792 549 A.

III. With letter of 5 November 2010, the patent proprietor filed a new main request and auxiliary requests 1 to 9. The claims of the main request corresponded to the claims as granted except that claim 19 depended now on claim 2 rather than on claim 1.

IV. By a decision announced orally on 7 December 2010 and issued in writing on 28 December 2010 the opposition division maintained the patent on the basis of claims 1-18 of auxiliary request 2.

The opposition division considered that claim 1 of the main request (corresponding to claim 1 as granted) lacked novelty over D1. It held that the feature "a skin layer providing cold seal receptive surface for a cold seal adhesive" did not limit the subject-matter of claim 1, as it had to be interpreted as to define a surface suitable for receiving a cold seal adhesive. However, suitability of the surface for receiving a

cold seal adhesive (the latter not being physically defined and not being standardized in the art) did not imply a particular performance of an eventual cold seal application. Thus, despite the fact that D1 did not disclose this functional feature - it disclosed all the other features of claim 1 - it deprived claim 1 of novelty.

Regarding claim 1 of auxiliary request 1 (the feature "suitable for sealing at ambient temperature of 15 to 26°C with a cold seal adhesive" had been added), the opposition division considered that the amendment lacked clarity.

The claims of auxiliary request 2 were held allowable. Claim 1 of this request differed from claim 1 as granted in that the feature "wherein said cold seal receptive surface of the first polyolefin skin layer is obtainable by a surface treatment selected from the group consisting of corona discharge treatment, flame treatment, atmospheric plasma treatment and corona discharge treatment in a nitrogen and carbon dioxide environment" had been added.

V. Appeals against the interlocutory decision of the opposition division were filed on 16 February 2011 by the opponent and on 7 March 2011 by the patent proprietor. The respective appeal fees were paid in due time.

As the patent proprietor and the opponent are both appellant and respondent in this appeal proceedings, for simplicity the board will continue to refer to them as the patent proprietor and the opponent.

VI. In its statement setting out the grounds of appeal filed on 26 April 2011 the opponent requested that the decision of the opposition division be set aside and the patent be revoked in its entirety. In support of its arguments the opponent submitted further additional documents:

D12: WO 01/49487 A;
D13: US 5 691 043 A;
D14: US 5 482 780 A.

VII. In its statement setting out the grounds of appeal filed on 27 April 2011 the patent proprietor requested that:

- (1) the decision of the opposition division be set aside and the patent be maintained on the basis of its main or alternatively auxiliary request 1;
- (2) alternatively, the appeal of the opponent be dismissed (auxiliary request 2);
- (3) alternatively, the decision under appeal be set aside and the patent be maintained on the basis of its auxiliary requests 3 to 9,

wherein the main request and auxiliary requests 1 to 9 corresponded to the requests filed with letter of 5 November 2010 and as re-filed with the statement of grounds of appeal.

VIII. With letter of 8 September 2011 the patent proprietor filed auxiliary requests 10 to 13 and 15 to 17. Auxiliary request 14 was filed with letter dated 13 September 2011. The patent proprietor also requested not to admit documents D12 to D14 into the proceedings.

- IX. With a letter dated 14 November 2011 the opponent filed additional arguments concerning the patentability of the patent proprietor's requests.
- X. Oral proceedings before the board were held on 2 July 2013. During these proceedings the patent proprietor withdrew its objection to the admittance of documents D12 to D14 into the proceedings. It also did not object to the opponent's new inventive step attack based on D10/D14 as representing the closest prior art being introduced into the proceedings. After discussion of its main request and the board's indication that this request would be allowable the patent proprietor withdrew all its auxiliary requests.
- XI. The relevant arguments put forward by patent proprietor in its written submissions and during the oral proceedings may be summarised as follows:

Novelty

- Claim 1 of the main request was novel over D1 because the functional feature was limiting as regards the claimed subject-matter. Adhesion could only be considered present above a certain minimal seal strength. Thus the functional feature of claim 1 excluded products with insufficient seal strength.
- D1 did not disclose films suitable for receiving a cold seal adhesive but related to heat sealable films. The experimental data of the opponent submitted with D9 concerned films according to D1

(table I of D9) which exhibited cold seal strength much lower than the value of 200 g/inch cited in D1 and could not be considered to exhibit cold seal adhesion. They had to be regarded as cold seal release films (in this context see D11). The distinction between cold seal release films and cold seal receptive films was known in the art (see D4, D10 and D14).

- Claim 1 of the main request was also novel over the disclosure of D12. That document did not contain either an explicit or implicit disclosure of the claimed polymer blend and did not disclose a skin layer with a cold seal receptive surface for a cold seal adhesive.

Inventive step

- Claim 1 of the main request involved an inventive step. D10/D14, both cited in the patent in suit, should be considered to represent the closest prior art because they related to polypropylene films with a cold seal receptive surface/layer. D1 belonged to a different technology, namely that of heat sealable polypropylene films, and dealt with a different technical problem. Therefore it was not the most promising starting point for arriving at the claimed invention.
- The claimed film differed from the disclosure of D10/D14 in the constitution of the skin layer which provided a cold seal receptive surface for a cold seal adhesive. The technical problem was seen in the provision of increased sustainability in time

without impairing adhesive strength. This was demonstrated by the technical evidence in the patent. The solution of the technical problem by using a blend of an ethylene propylene random copolymer and a metallocene catalyzed plastomer in specific amounts was not disclosed or suggested in the cited prior art and therefore it was not obvious to the skilled person.

- Furthermore, the skilled person would not find any pointer in the cited prior art towards the claimed solution. D1 was irrelevant since it related to a different technology. Moreover, the skilled person would not apply surface corona treatment on the skin layer of D1, necessary to obtain a cold seal receptive surface. Such a treatment would be detrimental to the properties of that surface as it increased the heat sealing initiation temperature and reduced the heat seal range (see D7 and D11).

XII. The relevant arguments put forward by the respondent in its written submissions and during the oral proceedings may be summarised as follows:

Novelty

- Claim 1 of the main request lacked novelty over D1. D1 disclosed all structural features of Claim 1. It did not disclose the functional feature of this claim, which, however, defined a cold sealable film "suitable" for receiving a cold seal adhesive. Nevertheless, suitability could not be considered to imply a certain performance of an eventual cold seal application when the multilayer film was combined

with a cold seal adhesive whose nature was not defined and could not be considered standardized. Furthermore, the technical evidence submitted with D9 (table I) illustrated that films prepared according to D1 exhibited cold seal properties. Thus the functional feature of claim 1 did not provide any limitation of the scope of the claim and did not distinguish this claim from the disclosure of D1.

- Claim 1 of the main request lacked novelty also in view of D12 since D12 disclosed all the structural features of claim 1. The functional feature of that claim did not define any limitation over the disclosure of D12.

Inventive step

- Claim 1 of the main request lacked an inventive step, the first line of attack considering D1 as the closest state of the art in combination with D12, D13 or D14.
- Starting from D1, the differentiating feature of claim 1 was the functional feature concerning the provision of a cold seal receptive surface for a cold seal adhesive.
- However, surface treatment was common practice in the field of multilayer polyolefinic films to be used in packaging (see D12 or D13 for heat sealing and D14 for cold sealing) and it was therefore absolutely obvious to subject such films to surface treatment like corona treatment, irrespective of whether the film as such was for heat seal or for

cold seal applications. The patent acknowledged that this treatment had been well known in the art (see paragraph [0009]) and there was no prejudice in the art not to do so. The effectiveness of this surface treatment on the cold seal adhesion strength was illustrated in D9 (compare table I with table II).

- Contrary to the arguments of the patent proprietor the experimental data of D7 was not convincing proof that the skilled person would be prevented from doing so. The argument that the heat seal properties would be degraded by the application of surface treatment was against common prior art (see D12 and D13).

- Claim 1 of the main request lacked an inventive step also considering D10/D14 as the closest state of the art. The differentiating feature of claim 1 was the skin layer composition which provided no specific technical effect (see table 1 of the patent in suit). This composition was simply an alternative composition, such a choice being within the ordinary technical skills of the skilled person and not involving an inventive step.

XIII. The patent proprietor requested that the decision under appeal be set aside and the patent be maintained on the basis of claims 1 to 19 of the main request as filed with the statement of the grounds of appeal dated 26 April 2011.

XIV. The opponent requested that the decision under appeal be set aside and the patent be revoked.

Reasons for the Decision

1. The appeal is admissible.
2. The claims of the main request correspond to the claims as granted except that the dependency in claim 19 has been amended to "according to claim 2" (instead of "according to claim 1"). This amendment was made in the first instance opposition proceedings in order to overcome the opponent's objection under Article 100(c) EPC. This objection was no longer an issue in the appeal, the only issues relating to novelty and inventive step of the main request.

3. Novelty

The opponent contested the novelty of the subject-matter of claim 1 of the main request on the basis of two documents, namely D1 and D12.

- 3.1 Claim 1 is directed to a polyolefin multilayer film comprising a polyolefin core layer and a first polyolefin skin layer, whereby the skin layer is defined in structural terms (ie it comprises a specific blend of polyolefins and does not contain a thermoplastic or natural rubber) and further has the functional requirement that this first skin layer provides a cold seal receptive surface for a cold seal adhesive.
- 3.2 There was agreement between the parties that the heat sealable multilayer film disclosed in example IX of D1 has all the structural elements required by claim 1 of

the main request. Whether the skin layer in D1 also satisfies the functional requirement of **a cold seal receptive surface** for a cold seal was, however, a matter of dispute.

3.2.1 The board agrees with the patent proprietor that the term "cold seal receptive surface" is a term well known in the art and has a specific and clear meaning to the skilled person. This functional feature provides a novelty-distinguishing feature over D1 for the following reasons:

3.2.2 As regards the interpretation of the functional feature "a cold seal receptive surface", reference is made to the declaration D11, which discusses the distinction between cold seal receptive properties and cold seal release properties: In point 2 it is stated:

"One skilled in the art would have understood that a cold release receptive property of a packaging film laminate is a surface designed or formulated such that a cold seal adhesive adheres strongly to said surface and is the surface to which the cold seal adhesive is applied or cold upon. In contrast, a cold seal release property in a packaging film laminate is a surface designed such that the cold seal adhesive adheres weakly ...". (emphasis added)

This distinction is not arbitrary but rather fully in line with the general understanding of the skilled person. This may for example be seen by turning to document D10, which discloses in table I cold seal release surfaces and in table II cold seal receptive surfaces. The same is apparent from D14, which relates

to a polypropylene film with cold seal release and cold seal receptive surfaces (document title). The reference is largely concerned with cold seal release properties, which it relates to a release force in the range of 0 to 75 g/in, preferably 5 to 50 g/in (column 6, lines 19-20). A release force of 5 to 95 g/in for cold seal release films is reported in table 1 of D14. By contrast, table 6, which lists cold seal adhesion results for cold seal receptive surfaces, reports seal performances ranging from 190-405 g/in with the majority of peak adhesion values well above 300 g/in and 27 out of 28 reported values clearly above 200 g/in.

In the light of the above it is quite clear that cold seal adhesion can only be present above a certain minimal seal strength. Thus, the requirement that the first polyolefin skin layer provides a cold seal receptive surface for a cold seal adhesive is suitable for distinguishing the claimed subject matter over the prior art.

3.2.3 During first instance proceedings, the opponent submitted document D9, which reports experimental data on cold seal properties of films prepared according to document D1. Table 1 of D9 reports cold seal performance values for the films of D1 which range between 22 and 114 g/in. As is apparent from D10 and D14, these values characterize the films of D1 as cold seal release films but not as cold seal receptive films. Only when the films of table 1 are corona-treated do the adhesion values approach those of a cold seal receptive surface. However, a corona-treatment of a

skin layer as specified in claim 1 of the main request is not disclosed in D1.

- 3.2.4 The conclusions drawn from D1 and D9 in the light of D10 and D14 are also confirmed by D11, where it is stated in point 5:

"Moreover, in my experience and to those skilled in the art, food packaging companies like Nestle, Kraft-Nabisco, General Mills, M&M Mars, Unilever, and others who routinely use cold seal receptive films in their packaging of snack food bars and confectionaries, require cold seal adhesion values to be at least 300g/in. This ensures robust, hermetic seals and inadvertant (sic) opening of their food package. Preferably, such cold seal adhesion should be in excess of 300g/in, and more preferably, in the range of 400-600g/in. Cold seal adhesion vales ranging from nominal 22g/in -114g/in as in D9 Table I, which are far below 300g/in, would not be considered by those skilled in the art as acceptable for use as a cold seal receptive film as claimed".

- 3.2.5 In view of the above considerations the board comes to the conclusion that the functional feature of claim 1 does not express merely wishful thinking with no technical contribution to the definition of the claimed subject-matter but has a clear technical meaning and serves to distinguish claim 1 from D1. Therefore, the subject-matter of claim 1 is novel over D1.

- 3.3 Regarding the other prior art document, D12, this document discloses a shrinkable multi-layer film comprising at least one polymeric core layer and skin

layers (page 1, lines 6-14). The film is used for packaging items such as cassette tapes, CD cases and tobacco boxes at high speed (page 1, lines 29-33). The composition of at least one of the skin layers is preferably selected to provide desirable heat seal characteristics, especially at relatively low heat seal temperatures (page 2, lines 24-32). Among the exemplified polymers, ethylene propylene random copolymers are disclosed. The skin layer may also be made from a low density polyethylene (LDPE). It can also be formed from a mixture of polymers such as 85 to 95 wt% of ethylene-propylene-butene-1 terpolymer and 5 to 15 wt% LDPE (page 6, line 29 to page 7, line 26).

However, D12 neither explicitly nor implicitly discloses the functional feature of claim 1, namely that the polyolefin skin layer provides a cold seal receptive surface for a cold seal adhesive. This has also not been demonstrated by the opponent. Moreover, as the patent proprietor correctly pointed out, D12 does not even disclose the specific polymer blend of the skin layer of claim 1, namely a blend of an ethylene propylene random copolymer at 50-90 wt% of the skin layer and metallocene catalyzed plastomer at 10-50 wt% of the skin.

Therefore the subject-matter of claim 1 is novel also over the disclosure of D12.

4. Inventive step

4.1 During the oral proceedings before the board the patent proprietor considered that documents D10/D14, which were used by the opponent in a new inventive step

attack, indeed represented the closest state of the art rather than D1, which had been considered as the closest state of the art by the opponent in the written procedure and by the opposition division.

4.1.1 The board concurs with the patent proprietor that either D10 or D14 should be considered as the closest state of the art because they belong to the specific technical field of the patent in suit, namely the field of polyolefin films for use in cold seal cohesive applications, ie applications requiring adequate sealing strength at ambient temperatures, typically 15-26°C (patent in suit: paragraphs [0003], [0009] and [0014]; D10: column 1, lines 16-19; D14: column 1, lines 32-35). Consequently, D10 or D14 is the most promising springboard to arrive at the claimed invention.

Regarding D1, it belongs to a different technical field, ie that of polyolefin films for use in heat seal cohesive applications (page 2, lines 7-9 and 48-51; table VI) requiring an adequate film seal strength when heating the sealable layer at a seal initiation temperature of 110°C or less. D1 aims to solve a different technical problem, namely to provide heat sealable layers having a seal initiation temperature of 110°C or less. Thus D1 is more remote to the claimed invention than D10 or D14.

4.1.2 As far as the disclosure of D10 is concerned, it concerns a polyolefin packaging film comprising a core layer, a cold seal release layer on one side of the core layer and a cold seal receptive skin layer on the opposite side of the core layer, where for the cold

seal receptive layer any polyolefin polymer from a variety of polyolefin polymers can be used. Among these polymers D10 discloses random copolymers of ethylene-propylene containing 2 to 8 wt% ethylene as well as olefin copolymers made by metallocene catalysis. The surface of the cold seal receptive layer is subjected to a physical surface-modifying treatment to improve the bond between the surface and the subsequently applied cold seal adhesive composition (claim 1; column 6, lines 18-32; column 11, line 51 to column 12, line 20; table II).

The disclosure of D14 is very similar to that of D10 and concerns polypropylene films with cold seal release and cold seal receptive skins. The cold seal receptive skin is 100% of an ethylene-propylene random copolymer containing about 2 to 8% of ethylene and has been subjected to a physical surface-modifying treatment to improve the bond between that surface and the subsequently applied cold seal adhesive (column 4, lines 19-27; column 5, lines 54-56).

- 4.2 The patent proprietor saw the problem underlying the patent in suit in the light of documents D10 or D14 in the provision of a cold seal receptive layer that ensures enhanced cold sealability and enhanced sustainability over time (see also patent in suit, paragraphs [0015] and [0016]).
- 4.3 As the solution to the technical problem, the patent in suit proposes a cold seal receptive skin layer comprising a blend of an ethylene propylene random copolymer at 50-90 wt% of the skin layer metallocene catalyzed plastomer at 10-50 wt% of the skin.

4.4 This technical problem has been plausibly solved in view of the technical evidence in the patent in suit. Table 1 in the patent specification demonstrates that the film according to the invention (example 1) has a (slightly) better cold seal strength after 5 weeks compared to films according to the prior art D10 and D14 (examples 2-4). This reflects a better shelf life. As regards the functional feature, the description provides both an example and a general teaching how to obtain such a cold seal receptive surface, in particular by using a surface treatment in order to increase the surface energy of the first polyolefin skin layer thereby creating good cold seal receptive properties.

In view of the above, the board is satisfied that the above defined problem is indeed the objective technical problem underlying the claimed invention and has been solved.

4.5 The skilled person starting from the disclosure of D10/D14 and seeking to provide a cold seal cohesive formulation that has enhanced cold sealability and enhanced sustainability over time would not find any hint in these documents or the other cited documents which would motivate him to use a blend of an ethylene propylene random copolymer at 50-90 wt.% of the skin layer and a metallocene catalyzed plastomer at 10-50 wt.% of the skin layer for the fabrication of the cold seal receptive skin layer. D14 uses 100 wt.% of an ethylene-propylene random copolymer and does not give any hint towards using a blend of copolymers. D10 discloses a group of potential polyolefins including an

ethylene-propylene random copolymer and metallocene catalysed polyolefins. However, D10 does not disclose the claimed amounts and does not provide any pointer towards the combination of the claimed components of the blend.

Regarding D1, the skilled person would not have taken it into consideration despite the disclosure of the claimed blend for the skin layer. D1 concerns the technical field of heat sealing and the skilled person would have no reason to use its disclosure in the field of cold sealing. This is also the reason why the board did not consider relevant the arguments of the opponent against the inventive step starting from D1 as the closest state of the art.

- 4.6 In summary, the subject-matter of claim 1 is not obvious from the cited prior art.
5. Dependent claims 2-19, which correspond to preferred embodiments of the subject-matter of claim 1, are *mutatis mutandis* novel and involve an inventive step.
6. On the basis of the above considerations the main request fulfils the requirements of the EPC and is therefore allowable.

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 19 of the main request and the description, pages numbered 2 to 6, of the published patent specification.

The Registrar:

The Chairman:

M. Cañueto Carbajo

W. Sieber