

Internal distribution code:

- (A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

**Datasheet for the decision
of 26 April 2018**

Case Number: T 0923/13 - 3.3.09

Application Number: 00900909.3

Publication Number: 1164085

IPC: B65D5/56

Language of the proceedings: EN

Title of invention:

Laminated packaging material for paper container

Patent Proprietor:

Tetra Laval Holdings & Finance S.A.

Opponents:

Alternapak Holding B.V.
SIG Technology AG
Greatview Aseptic Packaging Europe GmbH

Headword:

Relevant legal provisions:

EPC Art. 100 (c), 100 (b)

Keyword:

Amendments - extension beyond the content of the application
as filed - yes (main and auxiliary requests 1 and 2)
Sufficiency of disclosure - no (auxiliary requests 3 to 7)

Decisions cited:

T 0523/89, T 0593/09

Catchword:



Beschwerdekammern
Boards of Appeal
Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0923/13 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 26 April 2018

Appellant: Tetra Laval Holdings & Finance S.A.
(Patent Proprietor) Avenue Général-Guisan 70
1009 Pully (CH)

Representative: Beck Greener
Fulwood House
12 Fulwood Place
London WC1V 6HR (GB)

Respondent 01: Alternapak Holding B.V.
(Opponent 01) Kerkenbos 1035
6546 BB Nijmegen (NL)

Representative: De Vries & Metman
Overschiestraat 180
1062 XK Amsterdam (NL)

Respondent 02: SIG Technology AG
(Opponent 02) Laufengasse 18
8212 Neuhausen am Rheinfall (CH)

Representative: Herzog, Fiessler & Partner Patentanwälte PartG
mbH
Immermannstrasse 40
40210 Düsseldorf (DE)

Respondent 03: Greatview Aseptic Packaging Europe GmbH
(Opponent 03) Bankstrasse 4
8400 Winterthur (CH)

Representative: Von Rohr Patentanwälte Partnerschaft mbB
Rüttenscheider Straße 62
45130 Essen (DE)

Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 20 February
2013 revoking European patent No. 1164085
pursuant to Articles 101(2) and 101(3)(b) EPC**

Composition of the Board:

Chairman W. Sieber
Members: J. Jardón Álvarez
 F. Blumer

Summary of Facts and Submissions

- I. This decision concerns the appeal filed by the proprietor of European patent No. 1 164 085 against the opposition division's decision to revoke it.
- II. The granted patent contained five claims, independent claims 1 and 5 reading as follows:

"1. A packaging material comprising at least constitution layers of a thermoplastic material outermost layer, a paper substrate layer, a barrier layer, and a thermoplastic material innermost layer and consisting the constitution layers laminated in above order, **characterized in that** the thermoplastic material innermost layer is laminated by an extrusion-laminating method and contains at least a linear low density polyethylene which has a narrow molecular weight distribution, and the thermoplastic material innermost layer has the properties parameter of an average density of 0.900-0.915, 88-103-degree C of a peak melting point, a melt flow index of 5-20, a swelling ratio (SR) of 1.4-1.6, and 20-50-micrometer of a layer thickness."

"5. A paper packaging container formed from a packaging material comprising constitution layers of at least a thermoplastic material outermost layer, a paper substrate layer, a barrier layer, and a thermoplastic material innermost layer and consisting the constitution layers laminated in above order, **characterized in that** the thermoplastic material innermost layer contains at least a linear low density polyethylene which has a narrow molecular weight distribution and has properties parameters of an average density of 0.900-0.915, 88-103-degree C of a

peak melting point, a melt flow index of 5-20, a swelling ratio (SR) of 1.4-1.6, and 20-50 micrometer of a layer thickness, a strip tape covers a discontinuous section of the thermoplastic material innermost layer is laminated by an extrusion-laminating method and between two edges of the packaging material in liquid tight, and at least a sealing-surface layer of the strip tap [sic] contains a linear low density polyethylene which has a narrow molecular weight distribution and has properties parameters of an average density of 0.900-0.915, 88-103-degree C of a peak melting point, a melt flow index of 5-20, a swelling ratio (SR) of 1.4-1.6, and 20-100 micrometer of a layer thickness."

The remaining claims were dependent claims.

III. The three opponents had requested revocation of the patent in its entirety on the grounds of Article 100(a) (lack of novelty and inventive step), (b) and (c) EPC.

The documents cited during the opposition proceedings included:

D16: Test Report from TÜV SÜD, dated 29 September 2009 (1 page);

D22: Japanese Industrial Standard JIS K 7210;

D23: German translation of JIS K 7210 (D22);

D34: Declaration by Mr R. LeVan of RWS Translation Division of Europa House dated 8 December 2010 (1 page);

D38: ISO 1133:1997 (E);

D39: ISO 1872-1:1993 (E);

D40: Declaration by Mr J. Wieser dated 9 December 2010
(8 pages);

D41: Declaration by Mr K. Geiger dated 9 December 2010
(2 pages);

D57: Declaration by Mr C. Oveby dated 22 October 2012
(12 pages); and

D58: Declaration by Mr B. Wesslén dated 22 October 2012
(9 pages).

IV. The opposition division's decision may be summarised as follows:

- The opposition division held that the subject-matter of the granted claims complied with the requirements of Article 123(2) EPC.
- The opposition division revoked the patent because in its view the invention as defined in claim 1 of all requests was insufficiently disclosed (Articles 100(b)/83 EPC). In particular, it noted that the subject-matter of claim 1 as granted relied entirely on parameters, such as the melt flow index (MFI) and the swelling ratio (SR). In such a situation it was of utmost importance that the underlying test methods were described in an unambiguously clear manner, so that the skilled person would know whether he was carrying out the measurements as intended, so as to arrive at test values and products fulfilling the claimed invention. In the opposition division's view this

was not the case, either for the melt flow index or for the swelling ratio.

V. The patent proprietor (in the following: the appellant) lodged an appeal and filed the statement setting out its grounds of appeal on 20 June 2013 (letter dated 17 April 2013). It requested that the decision under appeal be set aside and that the case be remitted to the opposition division for further consideration of the issues not yet decided. Alternatively, it requested that the case be remitted to the opposition division for further consideration on the basis of any one of auxiliary requests 1 to 6 that were pending before the opposition division, i.e. the auxiliary requests filed with a letter dated 1 June 2011. Lastly, it requested reimbursement of the appeal fee due to the opposition division's failure to provide a reasoned decision in accordance with Rule 111(2) EPC.

VI. With their replies dated respectively 3 January 2014 and 20 December 2013, opponents 02 and 03 (in the following: respondent 02 and respondent 03) requested that the appeal be dismissed. Respondent 02 further requested that the case not be remitted to the opposition division for further prosecution, whereas respondent 03 requested that the case be remitted to the opposition division for further consideration.

Respondent 02 filed the following further documents:

D61: Declaration by Mr Duisken dated 11 December 2013 concerning density measurements (2 pages); and

D62: Declaration by Mr Duisken dated 11 December 2013 concerning peak melting point measurements (2 pages).

VII. In a communication dated 26 October 2017, the board indicated the points to be discussed during the oral proceedings. It also expressed its preliminary view that the skilled person would know how to measure the melt flow index for polyethylene using common general knowledge and that it would *inter alia* have to be clarified in the oral proceedings whether this also applied to blends of polyethylene and other polymers.

VIII. By letter of 11 January 2018, the appellant filed a further submission including a new auxiliary request 5 and auxiliary requests 6 and 7, the latter two being merely renumbered versions of previous auxiliary requests 5 and 6. It also filed the following documents:

D63: Minutes of oral proceedings on European divisional application No. 09169814.2; and

D64: Decision in invalidation proceedings against Chinese patent No. ZL00803189.4.

IX. With letters dated 12 and 13 March 2018, respondents 02 and 03 filed further arguments in support of their requests.

Respondent 02 amended its request such that it too now requested that the case be remitted to the opposition division for further consideration of the objections raised under Article 100(a) EPC.

Respondent 03 requested that auxiliary requests 5 to 7 not be admitted into the proceedings, and it filed the following further documents:

D65: H. Münstedt *et al.*, "Deformation and Flow of Polymeric Materials", Springer-Verlag Berlin Heidelberg, 2014, Chapter "11.5.4 Extrudate Swell", pages 383 to 386;

D66a:H.M. Laun, "Orientation effects and rheology of short glass fiber-reinforced thermoplastics", Colloid & Polymer Sci. 262, 1984, pages 257 to 269; and

D66b:S.B. Kharchenko *et al.*, "Flow-induced properties of nanotube-filled polymer materials", nature materials, vol. 3, 2004, pages 564 to 568.

- X. By letter of 26 March 2018 the appellant filed a further submission.
- XI. Respondent 01 did not file any requests or submissions during the appeal proceedings. Nor did it attend the oral proceedings.
- XII. During the oral proceedings held on 26 April 2018 respondent 03 withdrew its request that auxiliary requests 5 to 7 not be admitted into the proceedings.

The claims of the main request are the granted claims (see point II above).

The claims of auxiliary request 1 correspond to the claims as granted, with claim 5 amended in respect of the wording "is laminated by an extrusion-laminating method and", which has been moved up in the claim from its original occurrence before "between two edges" and is now placed after the wording "characterized in that the thermoplastic material innermost layer".

The claims of auxiliary request 2 correspond to the claims as granted, but with claim 5 deleted (see point II above).

The claims of auxiliary request 3 correspond to the claims as granted, but with claim 5 deleted. Furthermore, claims 1 to 4 now specify that the claimed packaging material is used "for paper containers".

Auxiliary request 4 further restricts claim 1 of auxiliary request 3 by requiring that the thermoplastic material innermost layer:

"is a blend which contains ~~at least~~ a linear low density polyethylene which has a narrow molecular weight distribution and a polyolefin".

In auxiliary request 5, claim 1 has been limited to specify that the innermost layer blend contains (in addition to the linear low density polyethylene which has a narrow molecular weight distribution) a polyethylene.

Claim 1 of auxiliary request 6 defines the thermoplastic material innermost layer as:

"a blend which contains a linear low density polyethylene which has a narrow molecular weight distribution and a low density polyethylene polymerised using a multi-site Ziegler catalyst".

Lastly, claim 1 of auxiliary request 7 defines the thermoplastic material innermost layer as:

"a blend which contains 55-75 wt% of a linear low density polyethylene which has a narrow molecular

weight distribution and 25-45 wt% of a low density polyethylene polymerised using a multi-site Ziegler catalyst".

XIII. The appellant's arguments where relevant to the present decision may be summarised as follows:

- The opposition division's decision was not a reasoned decision, in the sense that it was impossible to understand which facts and arguments had been accepted and which had been rejected. This was a substantial procedural violation which, if the appeal succeeded, would justify reimbursement of the appeal fee.
- Deletion of the words "for paper containers" in claim 1 did not involve added subject-matter. The mandatory presence of a paper substrate layer in the packaging material ensured that the suitability for making paper containers remained a feature of the claim. In any case the term "for paper containers" was reintroduced in the claims of auxiliary requests 3 to 7.
- While claim 1 as filed was grammatically not entirely correct, the only meaningful reading was to associate the properties of density, melting point, melt flow index and thickness with the innermost layer. To support its arguments the appellant relied on a declaration by a translator assuring that the original text as filed in Japanese was correctly represented by the granted patent.
- The feature of the innermost layer being extrusion-laminated found its basis on page 17, paragraphs 2

and 3, of the application as filed, disclosing that the optimal property parameters were attained when an extrusion lamination process was used.

- Claim 5 contained an obvious error which would be mentally corrected by the skilled person reading the specification. In any case, claim 5 was deleted from auxiliary requests 2 to 7.

- The skilled person would know how to measure melt flow index for polyethylene, and the results would be unambiguous. The standards for measuring the melt flow index were well known to the skilled reader. They were all essentially equivalent in methodology and would produce the same result. The witness declarations filed were unanimous in stating that the skilled person would measure the melt flow index using the test conditions of a temperature of 190°C and a 2.16kg load in the apparatus defined in all the standards. These conditions were mandatory for all polyethylenes that could plausibly be useful in the invention for the innermost layer of the laminate, given that it had to be suitable for extrusion lamination.

- The skilled person would also understand that the polymer blends for use in the invention would require the same conditions used for polyethylene in order to obtain results that can be compared. The skilled person would automatically discard other blends with polymers that could not be measured under the standard conditions for polyethylene as not being within the scope of the claims. In any case, such blends would also not fulfil the other parameter requirements of the claim.

XIV. The arguments of the respondents where relevant for the present decision may be summarised as follows:

- The granted patent contravened the requirements of Article 123(2) EPC for the following reasons:
 - Granted claim 1 referred to a packaging material as such, while the application as originally filed was directed to a packaging material "for paper containers". The claimed subject-matter extended beyond the content of the application as filed, as it now included embodiments in which the packaging material was not to be used for paper containers;
 - There was no support for associating the series of parameters with the innermost layer. The claims as originally filed associated these properties with the linear low density polyethylene component, not with the layer. This had in fact also been the view of the appellant during the examination proceedings before the EPO and before the USPTO;
 - The incorporation of the wording "[the thermoplastic material innermost layer] is laminated by an extrusion-laminating method and" in granted claims 1 and 5 had no support in the application as filed. The passage on page 17 relied on by the appellant could not be taken as a basis for the amendment, because it did not relate to the innermost layer;
 - Even if support for the above amendment were to be acknowledged by the board, claim 5 still

extended beyond the content of the application as filed. The appellant's argument that the wording "is laminated by an extrusion-laminating method and" was misplaced could not be admitted, because the feature did indeed have a technical sense and the proposed correction was not at all obvious.

- The patent 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 defined the claimed subject-matter by means of a multitude of parameters without specifying or indicating the detailed method for their determination or measurement. These parameters were the melt flow index, the average density, the swelling ratio, the peak melting point and the "narrow" molecular weight distribution of the innermost layer.

- In relation to the melt flow index the respondents pointed out that: (i) there was no information in the patent as to how the melt flow index could be measured or determined with respect to one single layer of the claimed complex laminate; (ii) the method of measurement of the melt flow index was not defined in the patent, and the evidence provided by the respondents showed that various measurement conditions led to different results depending on the temperature and load used; and (iii) even assuming that it should be measured at a temperature of 190°C and a load of 2.16kg for polyethylene, the claimed subject-matter included blends of polymers for which the skilled person was unable to establish the conditions under which the melt flow index should be measured. At least this

parameter was so ill-defined that the invention was not sufficiently disclosed.

- XV. The appellant requested that the decision under appeal be set aside and that the case be remitted on the basis of the granted claims (main request) to the opposition division for further consideration of the issues not yet decided. Alternatively, it requested that the case be remitted to the opposition division for further consideration on the basis of any one of auxiliary requests 1 to 7, auxiliary requests 1 to 4 as filed with the letter dated 1 June 2011 during opposition proceedings, and auxiliary requests 5 to 7 as filed with the letter dated 11 January 2018.

The appellant further requested reimbursement of the appeal fee due to the opposition division's failure to provide a reasoned decision in accordance with Rule 111(2) EPC.

- XVI. Respondents 02 and 03 requested that the appeal be dismissed, and subsidiarily that the case be remitted to the opposition division for further consideration of the issues not yet decided, namely the objections raised under Article 100(a) EPC.

Reasons for the Decision

MAIN REQUEST (granted claims)

1. *Amendments (Article 100(c) EPC)*

1.1 Respondents 02 and 03 argued that granted claim 1 extended beyond the content of the application as filed because:

- (a) the application as filed related to packaging material for paper containers, so deletion of the words 'for paper containers' in prosecution resulted in added matter;
- (b) the properties parameters in granted claim 1 related to the innermost layer rather than its linear low density polyethylene component (in the following mLLDPE) as in the application as filed; and
- (c) the feature whereby "the thermoplastic material innermost layer is laminated by an extrusion-laminating method" lacked a proper basis in the application as filed.

They further argued that granted claim 5 extended beyond the content of the application as filed because:

- (d) it included the feature "... a strip tape covers a discontinuous section of the thermoplastic material innermost layer is laminated by an extrusion-laminating method and between two edges of the packaging material in liquid tight..." (emphasis added by the board), whereas according to Figure 2 of the application as filed what was disclosed was

a strip tape which was sealed to the packaging material wrap by a strip tape applicator.

- 1.2 Concerning (a), a claim directed to a "product for a particular use" is, according to EPO practice, to be construed as meaning a product which is in fact suitable for said particular use (see e.g. T 523/89 and also the examples given in Case Law of the Boards of Appeal of the EPO, 8th edition 2016, I.C.8.1.5).

In other words, the expression "a packaging material for paper containers" used in claim 1 as filed and throughout the application as filed represents a limitation which requires the packaging material to be suitable for paper containers. According to the normal use of language this *prima facie* implies that the packaging material is not suitable for just any container. Deletion of the words "for paper containers" in granted claim 1 implies that the claim no longer requires that the packaging material must be selected in such a way that it is suitable for producing paper containers and thus extends beyond the content of the application as filed.

- 1.2.1 According to the appellant it had to be borne in mind that claim 1 as granted still required the presence of "a paper substrate layer". Furthermore, the word "container" had a very broad meaning, being defined for example on www.dictionary.com as "anything that contains or can contain something, as a carton, box, crate or can". A packaging material according to claim 1 would always be suitable for forming into an object which could contain something. As the material of claim 1 was required to have a paper substrate layer, such an object would be a paper container. Thus, the limitation implied by the words "for paper

containers" still remained a feature of the claim even after their deletion.

1.2.2 The board disagrees. As pointed out by the respondents, the mere presence of a paper substrate layer does not ensure that the packaging material would automatically be considered suitable for a paper container. In fact, the claim embraces embodiments with a very thin paper substrate layer that would then rather be a wrapping paper. It is at least doubtful whether wrapping paper would be considered to be a paper container. Even the dictionary cited by the appellant appears to associate some kind of shape with a container.

1.2.3 For these reasons deletion of the words "for paper containers" results in the claim including embodiments not envisaged in the application as filed.

1.3 Concerning (b), claim 1 as granted defines the claimed subject-matter in terms of the following parameters characterising the thermoplastic innermost layer:

average density,
peak melting point,
melt flow index,
swelling ratio (SR), and
layer thickness.

The respondents argued that there was no direct and unambiguous disclosure in the application as filed which associated at least the first four parameters with the innermost layer rather than with its mLLDPE component.

1.3.1 The patent originates from an international application for which the EPO was a designated Office but which had

originally been filed in Japanese. Upon entry into the European phase, an English translation of the international application as originally filed (description, claims and drawings) was submitted to the EPO. In such a case the text as filed within the meaning of the convention is the original Japanese PCT application (cf. Articles 153(2) and 70(2) EPC).

- 1.3.2 During opposition proceedings the appellant filed a declaration by a translator (D34) addressing the issue relating to the innermost layer. The translator declared that it was clear from the wording of claim 1 in the Japanese PCT application WO 2000/44632 that the "characteristic parameters" mentioned in the characterising part referred to the parameters of the "innermost thermoplastic material layer" rather than to the linear low density polyethylene that has a narrow molecular weight distribution (see D34, penultimate paragraph).
- 1.3.3 The translator's declaration has not been contested by the respondents. Therefore, the board can only conclude that amendment (b) is supported by the application as filed.
- 1.4 Concerning (c), namely that "the thermoplastic material innermost layer is laminated by an extrusion-laminating method", the board agrees with the appellant that this amendment finds support on page 17 of the application as filed.
 - 1.4.1 Although several lamination methods are mentioned in the paragraph bridging pages 16 and 17 of the application as filed, the extrusion lamination process is identified as being the preferred one in the manufacture of packaging material (see page 17, first

full paragraph). Moreover, the second full paragraph of page 17 of the application as filed points towards extrusion lamination of the innermost layer:

"In the preferable embodiment by this invention, since the resin to be extruded and laminated has the properties parameter adjusted the optimal in the average density, the peak melting point, the melt flow index, the swelling ratio, and the layer thickness, and, for the reason, the extrusion-laminating properties and the good converting properties in packaging material manufacture are shown."

The board accepts that this paragraph does not explicitly refer to the innermost layer, but it agrees with the appellant that the mention of the same properties parameters (average density, peak melting point, etc.) as in claim 1 of the application as filed directly and unambiguously points towards extrusion lamination of the innermost layer. These are the relevant parameters identified throughout the application as filed to obtain the benefit of the invention.

- 1.4.2 Thus, the board is satisfied that amendment (c) finds support in the application as filed.
- 1.5 Lastly, concerning amendment (d), the board agrees with the respondents that the pre-grant amendment to claim 5 finds no support in the application as filed.
 - 1.5.1 According to the appellant, the amendment did not add subject-matter because it resulted from an obvious error. It would have been immediately clear to the skilled reader that the inserted sentence made no sense at this position of the claim. At the same time, the

skilled reader would "mentally" place the sentence after the first occurrence of the word "layer" in the characterising part of the claim.

1.5.2 The board is not convinced. In order for a correction to be allowable under Rule 139, second sentence, EPC, it must be established:

- (i) that it is obvious that an error is in fact present in the document filed with the EPO, the incorrect information having to be objectively recognisable by the skilled person using common general knowledge, and
- (ii) that the correction of the error is obvious in the sense that it is immediately evident that nothing else would have been intended than what is offered as the correction (see Case Law of the Boards of Appeal of the EPO, 8th edition 2016, II.E.4.2).

1.5.3 The board agrees with the appellant that the skilled reader would recognise that the added sentence does not make any sense in its present position in the claim, but it disagrees with the appellant's assertion that it would be immediately evident what the correct context for the sentence would be.

Firstly, there are several layers in the laminate that could be extrusion-laminated, and the skilled person has no reason to assume that it can only be the innermost layer. Other layers are equally possible, and even the strip tape itself, at least according to the respondents. Secondly, the board cannot accept the appellant's argument that it can only be the "innermost layer" because the same amendment has been made to

claim 1. In fact, claim 1 has also been amended such that the parameters relate to the innermost layer, as discussed under (b) above. This amendment has not been made in claim 5. Thus, there is no conformity in the amendment of claim 1 and the alleged correct position of the relevant wording in claim 5. Therefore, the board is not convinced that the skilled reader would draw any conclusion by analogy by only considering part of the amendment to claim 1, while ignoring the rest.

- 1.6 In summary, amendment (a) to claim 1 and amendment (d) to claim 5 are not supported by the disclosure of the application as filed. The ground under Article 100(c) EPC thus prejudices the maintenance of the patent on the basis of the main request.

AUXILIARY REQUESTS 1 AND 2

2. *Amendments (Article 100(c) EPC)*

Claim 1 of auxiliary requests 1 and 2 is identical to claim 1 of the main request, with the consequence that the ground under Article 100(c) EPC prejudices the maintenance of the patent on the basis of the first and second auxiliary requests at least for the same reason as for amendment (a) to the main request.

AUXILIARY REQUEST 3

3. *Amendments (Article 100(c) EPC)*

- 3.1 Claim 1 of auxiliary request 3 differs from claim 1 of the main request in that the claim now refers to a "packaging material for paper containers". Additionally, claim 5 has been deleted in this request.

3.2 These amendments overcome the reasons for rejecting the main request and auxiliary requests 1 and 2. As regards the other two objections against pre-grant amendments in the claim (see point 1.1, amendments (b) and (c)), these have already been dealt with by the board in relation to the main request and found to be allowable.

3.3 Consequently, the subject-matter of the claims of auxiliary request 3 does not contain subject-matter which extends beyond the content of the application as filed.

4. *Sufficiency of disclosure (Article 100(b) EPC)*

4.1 The invention aims to provide a packaging material for paper containers suitable for filling with liquid foods. The packaging material has *inter alia* good extrusion lamination properties, so that it can be easily manufactured, and good heat sealing properties (see paragraphs [0001], [0015] and [0016]).

4.2 This is said to be achieved by using a packaging material according to claim 1 comprising several layers (see paragraph [0017]). It is clear from claim 1 and the patent specification that the nature of the innermost layer is essential for solving the problem underlying the invention. In fact, this is the only layer particularly specified in claim 1.

4.3 Claim 1 is directed to a packaging material for paper containers comprising several layers and it is characterised in that the thermoplastic material innermost layer:

- is laminated by an extrusion-laminating method,

- contains at least mLLDPE, and
- has the following properties parameters:
 - an average density of 0.900-0.915,
 - an 88-103°C peak melting point,
 - a melt flow index of 5-20,
 - a swelling ratio (SR) of 1.4-1.6, and
 - a 20-50 micrometer layer thickness.

Thus, the thermoplastic innermost layer is defined by a product-by-process feature, in part by its composition (contains at least mLLDPE) and its properties (average density, peak melting point, melt flow index, swelling ratio and layer thickness).

4.4 The opposition division held that the invention was not sufficiently disclosed because it was doubtful how to determine two of these parameters, namely the melt flow index and the swelling ratio. The respondents agreed with the opposition division and raised several additional objections.

4.5 During the oral proceedings before the board, the discussion on sufficiency focused on the determination of the melt flow index. In that respect the respondents pursued two lines of argument:

- (i) The patent did not contain any feasible disclosure of how to measure the melt flow index of the **layer** of the final laminate.
- (ii) The patent specification gave no reproducible indication of the exact measurement conditions to be used when measuring the melt flow index; this objection applied both to an embodiment where the

innermost layer was made of mLLDPE only and to an embodiment where the layer was made of blends of mLLDPE with other polymers.

4.6 Melt flow index measurement of the thermoplastic material innermost layer

4.6.1 The respondents pointed out that it was clear from the wording of claim 1 that it was the thermoplastic material innermost **layer** which had to have a melt flow index of 5-20. However, the patent did not contain any teaching as to how to determine this parameter in the final product, namely in the claimed packaging material.

4.6.2 The appellant agreed with the respondents that the melt flow index in the claim referred to the melt flow index of the layer in the packaging material, but argued that it was indeed possible for the skilled person to determine this parameter without undue burden. This was shown by D57 (paragraph 28), where the melt flow index of the innermost layer recovered from commercial packages sold by respondent 03 was determined.

Furthermore, the melt flow index of mLLDPE would not be affected by the extrusion conditions as argued by the respondents, so the melt flow index of the starting material was not significantly different from that of the extruded layer. This was also shown in D57 (paragraphs 30 and 31). The respondents strongly contested this argument by reference to D52.

4.6.3 There is, however, no need for the board to decide whether the respondents' objection on this point amounts to a lack of sufficiency, because in any case insufficiency of disclosure results from the lack of

information on how to measure the melt flow index when the innermost layer is made of a blend of polymers (see point 4.8 below).

4.7 Determination of the melt flow index of polyethylene

4.7.1 It is true that the patent specification does not describe the test method to be used to determine the melt flow index of the thermoplastic material innermost layer. However, insofar as the claims relate to embodiments where mLLDPE constitutes the only component of the innermost layer, the board agrees with the appellant that the skilled person knows from his common general knowledge how in principle to determine this parameter.

4.7.2 As explained by the appellant in its statement of grounds of appeal, there are standard methods for measuring the melt flow index which are well known to the skilled person. They form part of the general knowledge and are essentially equivalent in methodology and produce roughly the same result. Three substantively equivalent standards have been cited in the proceedings, namely JIK K7210 (D22 and its German translation D23), ISO 1133 (D38) and ASTM D1238.

4.7.3 There are small differences between the methods, but they essentially perform the same function. They establish the mass of polymer, in grams, flowing in ten minutes through a capillary of a specific diameter and length under a pressure applied via a certain weight at a certain temperature. The test involves first establishing the appropriate temperature for the material being tested. The other key input parameter is the weight that is placed on the material sample once it has been loaded into the cylinder and brought up to

the specified temperature. The temperature and the weight are polymer-specific set points.

- 4.7.4 The applicable temperature and weight for a given polymer are defined in the standards. For polyethylene, the conditions to be used are specified in ISO 1872-1 (D39), which is explicitly incorporated into JIS F7210 (see list of reference standards on page 1 of D22 and on page 2/29 of D23), and in ISO 1133 (D38, point 2). For polyethylenes that could be useful in the invention, a temperature of 190°C and a nominal load of 2.16kg has to be used (see D39, Table 3).
- 4.7.5 The witness declarations D40, D41, D57 and D58 filed by the appellant confirm that the skilled person would measure the melt flow index of mLLDPE suitable in the invention under the test conditions of 190°C and 2.16kg load in the apparatus defined in all the standards (see, for instance, D40 paragraphs 2 to 5; D41 paragraph 4; D57 paragraph 18; D58 paragraphs 18 to 20).
- 4.7.6 The respondents relied on test report D16, showing that the use of different loads results in different values for the melt flow index. However, this cannot alter the above finding, because the skilled person would know that he has to use a load of 2.16kg (and a temperature of 190°C) when measuring the melt flow index of mLLDPE suitable in the invention.
- 4.7.7 For these reasons the board is convinced that the skilled person would know from his common general knowledge how to determine the melt flow index of the thermoplastic material innermost layer when it is made of polyethylene, in particular mLLDPE.

4.8 Determination of the melt flow index of polymer blends

4.8.1 However, the subject-matter of claim 1 is not limited to the use of mLLDPE as the only polymer material of the innermost layer. According to paragraphs [0049] and [0050] of the patent specification, blends of mLLDPE with other polymer components are equally envisaged. In fact, blends with other polymer components are recommended when it is difficult to obtain the required properties parameters using only mLLDPE (see paragraph [0049]). Such other polymers are thermoplastic resins, such as polyethylene, polypropylene and ethylene copolymer, and a polyester resin as explicitly mentioned in paragraph [0050].

4.8.2 Thus, in view of paragraph [0050], the subject-matter of claim 1 clearly embraces blends of mLLDPE with polypropylene and polyester resin or even polycarbonate, as pointed out in particular by respondent 02. For these blends the above-mentioned conditions for polyethylene do not apply. ISO 1872-1 (D39, point 1.3) explicitly states that it is applicable only:

"to all polyethylene homopolymers and to copolymers of ethylene having a content of other 1-olefinic monomers of less than 50% (m/m) and a content of non-olefinic monomers with functional groups up to a maximum of 3% (m/m)."

For a given blend, the applicable temperature and weight conditions are not defined in the standards. According to Annex B of D38 the conditions for polypropylene (condition M, 230°C and 2.16kg load) and for polycarbonate (condition W, 300°C and 1.20kg load) are quite different from those for polyethylene

discussed in point 4.7 above. Respondent 02 further pointed out that at least some types of polyester resin, in particular crystalline types, would not form a homogeneous molten mass with mLLDPE, so it was in principle not possible to determine a meaningful melt flow index of such a blend.

4.8.3 Thus, contrary to the situation discussed above for mLLDPE and polyethylene in general, where the precise conditions form part of the common general knowledge of the skilled person, it has not been shown that there is a common general knowledge applicable to a blend of polymers. However, these conditions are mandatory for obtaining a meaningful value for the melt flow index. Without knowing the applicable temperature and weight for a blend, the skilled person is unable to determine its melt flow index unless he starts his own research on this matter. Since there is no guidance whatsoever in the patent in suit, the board agrees with the respondents that this amounts to an undue burden leading to insufficiency of disclosure in this respect.

4.8.4 The appellant argued in this respect that the skilled person would indeed know that for blends the same conditions should be employed as for polyethylene. If the skilled person wished to select a blend containing a polymer other than polyethylene, he would take into account that the same level of runniness would be required as for polyethylenes, and would therefore use the same conditions. A measurement under different conditions would not be comparable and would not yield a polymer with the desired properties.

Further, the skilled person would automatically discard blends that could not be measured under said conditions as not being covered by the claims. Moreover, such

blends would not fulfil the other parameters of the claim (average density, peak melting point, swelling ratio).

4.8.5 The board is not persuaded by these arguments:

- Concerning the first argument, it notes that even for blends containing, in addition to mLLDPE, small amounts of polypropylene or amorphous polyester that are liquid at 190°C, the skilled person would still not necessarily apply the conditions of polyethylene, because he knows they are valid only for polyethylene (see points 4.7.5 and 4.8.2 above).
- Apart from that, the subject-matter of the claims is not limited to embodiments including only a small amount of other polymers that could be measured under the standard conditions for polyethylene. The blends mentioned in paragraph [0050] of the specification as being preferred embodiments of the invention include polymers that are crystalline at 190°C, which cannot be measured.
- The board can also not follow the appellant's second argument that the skilled person would discard such blends as not being within the scope of the claims. As already explained above, blends with other polymers are disclosed in paragraphs [0049] and [0050] as specific embodiments of the invention. The skilled person would indeed be motivated by these paragraphs to use them and could not put the invention into practice because he could not identify the

conditions to be applied to determine the melt flow index, at least not without undue burden.

- In this context, the board can also not accept the appellant's further argument that such blends would not fulfil the other parameters of the claim. This argument is speculative and was not supported by any evidence.

4.8.6 In summary, it is not disclosed in the patent, nor is it within the common general knowledge of the skilled person, how the melt flow index has to be determined when using blends of mLLDPE with polymers other than polyethylene. Since the melt flow index represents an essential feature of the claimed invention, the fact that it cannot be determined by the skilled person in a reliable and reproducible manner prevents the implementation of at least that part of the claimed subject-matter, contrary to the requirements of Article 100(b) EPC.

In other words, the melt flow index in the context of the above-mentioned blends is so ill-defined that the skilled person is not able without undue burden to identify the technical measures, i.e. the blends to be used, necessary to solve the problem underlying the patent, i.e. to provide a packaging material (see, T 593/09, Catchword).

4.8.7 Consequently, auxiliary request 3 must be refused.

AUXILIARY REQUESTS 4 TO 7

5. *Sufficiency of disclosure (Article 100(b) EPC)*

5.1 Claim 1 of these auxiliary requests differs from claim 1 of auxiliary request 3 in that the thermoplastic material innermost layer now contains a blend of mLLDPE and a further more specifically defined polymer. The thermoplastic material is defined as follows (features deleted from or added to claim 1 of auxiliary request 3 struck through and underlined, respectively):

Claim 1 of auxiliary request 4: "... is a blend which contains ~~at least~~ a linear low density polyethylene which has a narrow molecular weight distribution and a polyolefin, ...";

Claim 1 of auxiliary request 5: "... is a blend which contains ~~at least~~ a linear low density polyethylene which has a narrow molecular weight distribution and a polyethylene, ...";

Claim 1 of auxiliary request 6: "... is a blend which contains ~~at least~~ a linear low density polyethylene which has a narrow molecular weight distribution and a low density polyethylene polymerised using a multi-site Ziegler catalyst, ...";

Claim 1 of auxiliary request 7: "... is a blend which contains 55-75 wt% ~~at least~~ of a linear low density polyethylene which has a narrow molecular weight distribution and 25-45 wt% of a low density polyethylene polymerised using a multi-site Ziegler catalyst, ...".

5.2 In the board's view, these amendments do not overcome the reasons for the lack of sufficiency of disclosure of auxiliary request 3 discussed above. Claim 1 of these requests is still drafted in an open way allowing for the presence of further polymer components.

5.2.1 Thus, claim 1 of auxiliary requests 4 to 6 requires that the blend contains mLLDPE and a further polymer (polyolefin or polyethylene), but the use of the word "contains" allows for the presence of further polymers in accordance with the disclosure of paragraphs [0049] and [0050] of the specification, which refers to "other polymer components" (in the plural) as further components of the blend.

5.2.2 The same applies to claim 1 of auxiliary request 7, which requires the presence of 80 wt% of polyethylene (at least 55 wt% of mLLDPE and at least 25 wt% of a low-density polyethylene polymerised using a Ziegler catalyst) and so still allows for 20 wt% of other polymers such as polyester resins, for which a determination of the melt flow index would not be possible according to the standard conditions for polyethylene as explained above.

5.3 In these circumstances, the reasoning for auxiliary request 3 applies *mutatis mutandis* to the subject-matter of the claims of auxiliary requests 4 to 7, which suffer from the same deficiency under Article 83 EPC as auxiliary request 3 and are therefore likewise refused.

6. *Reimbursement of the appeal fee*

6.1 Rule 103(a) EPC stipulates that "[t]he appeal fee shall be reimbursed [...] where the Board of Appeal deems an

appeal to be allowable, if such reimbursement is equitable by reason of a substantial procedural violation".

6.2 Since the appeal is not allowable, the appellant's request for reimbursement of the appeal fee cannot be allowed either.

7. In summary, none of the appellant's requests is allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



M. Cañueto Carbajo

W. Sieber

Decision electronically authenticated