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**Datasheet for the decision
of 31 January 2019**

Case Number: T 1513/15 - 3.3.09

Application Number: 09171597.9

Publication Number: 2177354

IPC: B32B27/00, B32B27/08,
B32B27/32, B60R13/00, B60R21/00

Language of the proceedings: EN

Title of invention:
Method for forming a multilayered polymeric structure

Patent Proprietor:
A. Schulman, Inc.

Opponent:
Treofan Germany GmbH & Co. KG

Headword:

Relevant legal provisions:
EPC Art. 54, 56, 76(1), 84, 123(2)
RPBA Art. 13

Keyword:

Main request: novelty (no)

Auxiliary requests 1 to 2: clarity (no)

Auxiliary request 3: added subject-matter (yes)

Auxiliary requests 4, 5, 7a, 7b, 8 and 9: inadmissible

Auxiliary request 6: inventive step (no)

Decisions cited:

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 1513/15 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 31 January 2019

Appellant: A. Schulman, Inc.
(Patent Proprietor) 3550 West Market Street
Akron, OH 44333 (US)

Representative: dompatent von Kreisler Selting Werner -
Partnerschaft von Patent- und Rechtsanwälten mbB
Deichmannhaus am Dom
Bahnhofsvorplatz 1
50667 Köln (DE)

Appellant: Treofan Germany GmbH & Co. KG
(Opponent) Bergstrasse
66539 Neunkirchen (DE)

Representative: Mai Dörr Besier
European Patent Attorneys
European Trademark Attorneys
Patentanwälte
Kreuzberger Ring 64
65205 Wiesbaden (DE)

Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
26 May 2015 concerning maintenance of the
European Patent No. 2177354 in amended form.**

Composition of the Board:

Chairman W. Sieber
Members: N. Perakis

D. Prietzel-Funk

Summary of Facts and Submissions

- I. This decision concerns the appeals filed by the patent proprietor and the opponent against the opposition division's interlocutory decision that European patent No. 2 177 354 as amended met the requirements of the EPC. The patent had been granted on a divisional application of the earlier European patent application No. 09711523.2 filed in accordance with Article 76 EPC.
- II. In its notice of opposition, the opponent requested that the patent be revoked in its entirety on the grounds of Article 100(a) (lack of novelty and lack of inventive step) and 100(b) EPC.

Claim 1 as granted reads as follows:

"1. A method for forming a multilayered polymeric structure, the method comprising coextruding a first thermoplastic layer having a polymeric component that consists essentially of a virgin polyolefin, with a second thermoplastic layer including regrind polyolefin, and with a third thermoplastic layer having a polymeric component that consists essentially of a virgin polyolefin; the second thermoplastic layer being adjacent to the first thermoplastic layer and the third thermoplastic layer; and thermoforming the coextruded multilayered polymeric structure."

- III. The documents cited in the notice of opposition included:

D2 : US 4 877 682 A;

D3 : US 6 194 043 B1;

D10: WO 2006/058301 A2; and

D12: Ulmann's Encyclopedia of Industrial Chemistry,
1995(26), pp 633-637.

IV. The opposition division held that:

- the subject-matter of claim 1 of the main request (claims as granted) lacked novelty in view of D3;
- the subject matter of claim 1 of auxiliary requests 1 to 4 did not fulfil the requirements of Article 123(2) EPC; and
- the subject-matter of the claims of auxiliary request 5, filed by letter of 12 March 2015, met the requirements of the EPC.

Claim 1 of auxiliary request 5 is based on claim 1 as granted (point II) with the addition at its end of the following features:

"wherein the multilayered polymeric structure is combined with an upper section that comprises a clear layer and a color layer".

V. Both the patent proprietor and the opponent appealed against the opposition division's interlocutory decision.

The patent proprietor requested that the opposition division's decision be set aside and the patent be maintained as granted or, alternatively, that the

patent be maintained on the basis of any of auxiliary requests 1 to 9 filed with the statement setting out the grounds of appeal dated 5 October 2015. Auxiliary request 3 corresponds to auxiliary request 5 before the opposition division.

The opponent requested that the opposition division's decision be set aside and that the patent be revoked in its entirety. With its statement setting out the grounds of appeal, it submitted the following documents, considered to be relevant for the assessment of inventive step:

D13 : JP 06 071 829 A;

D13a: Machine translation in English of D13;

D14 : US 2007/0264468 A1; and

D15 : US 2005/0070673 A1.

VI. Since the patent proprietor and the opponent are both appellants and respondents in these proceedings, for the sake of simplicity they are referred to as "the patent proprietor" and "the opponent".

VII. By letter of 11 February 2016, the patent proprietor requested that D13, D13a, D14 and D15 not be admitted into the proceedings. Furthermore, it filed an additional document to show that virgin and regrind polyolefin were usual terms in the art:

D17: Product Information DuPont Hytrel[®] polyester elastomer, 11/93, pp 1-8.

- VIII. By letter of 19 February 2016, the opponent submitted further documents which it considered relevant for the assessment of novelty:
- D16 : JP 06 071 829 A; and
- D16a: English translation of D16.
- IX. By letter of 24 May 2016, the patent proprietor requested that documents D16 and D16a not be admitted into the proceedings.
- X. On 12 October 2018, the board issued a communication in preparation for oral proceedings. According to the board's preliminary non-binding opinion, the subject-matter of claim 1 of the main request and auxiliary request 1 appeared to lack novelty in view of D2 and D3; the subject-matter of claim 1 of auxiliary request 2 appeared to lack clarity; the subject-matter of claim 1 of auxiliary request 3 appeared to fulfil the requirements of Articles 123(2), 83, 54 and 56 EPC; and the subject-matter of claim 1 of auxiliary requests 4, 5, 7 to 9 did not appear to fulfil the requirements of Article 123(2) EPC.
- XI. By letter of 20 December 2018, the patent proprietor submitted new auxiliary requests 4, 5, 7a, 7b, 8 and 9 to replace pending auxiliary requests 4, 5, 7, 8 and 9.
- XII. By letter of 15 January 2019, the opponent requested that the new auxiliary requests 4, 5, 7a, 7b, 8 and 9 not be admitted into the proceedings.
- XIII. On 31 January 2019, oral proceedings were held before the board in the absence of the patent proprietor, as announced by letter of 22 January 2019.

XIV. The arguments put forward by the patent proprietor in its written submissions that are relevant to the present decision may be summarised as follows:

Main request

The subject-matter of claim 1 was novel over the cited prior-art documents. D2 did not disclose a three-layered structure in which each layer had a polyolefin. D3 did not disclose that the polyolefins HDPE and ADH used for the first and third layer of the multilayer structure mentioned in column 5 were virgin polyolefins.

Auxiliary request 1

The amendment in claim 1 to a virgin thermoplastic polyolefin (first and third layer) and a regrind thermoplastic polyolefin (second layer) did not extend the subject-matter of the claim beyond the content of the application as filed. The layers of the multilayer structure were indicated as being thermoplastic and had essentially only one polymer, namely, a polyolefin, which obviously needed to be thermoplastic. After all, it was the polymeric base which imparted thermoplasticity to the layers.

Examples 1a and 8a and figure 10 of the patent in suit clearly referred to a multilayered polymeric structure comprising virgin thermoplastic polyolefin and regrind thermoplastic polyolefin, which was apparent by the presence of an elastomer and a filler. Therefore, the components of the described multilayered structures met the requirements set out in paragraph [0003] of the patent in suit for a thermoplastic polyolefin (TPO)

which was a blend of an olefin, an elastomer and a filler.

Auxiliary request 2

The subject-matter of claim 1 was also disclosed in the application as filed (page 26, lines 13-15) and thus did not extend beyond the content of the application as filed.

Auxiliary request 3

The subject-matter of claim 1 did not extend beyond the content of the application as filed. It was based on the subject-matter of claim 49 of the parent application as filed combined with the additional features of claims 51 and 52 of the parent application as filed. It was also disclosed in the description and figure 8 as filed.

The subject-matter of claim 1 involved an inventive step. The skilled person would not have seriously contemplated the modification of the container of D3, considered the closest prior art, by adding a clear layer and a colour layer, as disclosed in D10, since the multilayered structures of D3 and D10 were designed for different uses.

Auxiliary requests 4, 5, 7a, 7b, 8 and 9

The newly submitted auxiliary requests 4, 5, 7a, 7b, 8 and 9 were a prompt response to the objections raised in the board's preliminary opinion. Their subject-matter was supported by the description as filed. They also satisfied the requirements of Articles 83, 84, 54 and 56 EPC.

Auxiliary request 6

The three-layered structure, in which the first and the third layer were described with the same wording, would obviously encompass an ABA-structure which, after all, was just a structure in which the first and the third layer were the same.

- XV. The arguments put forward by the opponent in its written submissions and during the oral proceedings that are relevant to the present decision may be summarised as follows:

Main request

The subject-matter of claim 1 lacked novelty in view of the disclosure of D2 and D3:

- D2 disclosed a method for forming a thermoformable, coextruded multilayer sheet comprising three layers each comprising a thermoplastic polymer or polymer blend in which the thermoplastic polymer might be a crystalline polyolefin and in which the inner layer, contiguous with two outer layers, comprised scrap polymer (abstract; column 3, lines 15-36, in particular, lines 21-23).
- D3 disclosed a method for forming bottles from a multilayered sheet involving the steps of coextrusion and thermoforming (column 11, lines 21-25 and 33-35). A specific 5-layered sheet construction involved the succession of HDPE/Regrind/ADH layers (column 5, lines 43-44).

Auxiliary request 1

The subject-matter of claim 1 extended beyond the content of the application as filed. The definition of the polyolefin as a thermoplastic could not be based on the definition given in the application as filed (page 1, line 21 to page 2, line 6), let alone that the "thermoplastic polyolefin" was necessarily a blend of olefin, an elastomer and a filler, otherwise it would be in contradiction to the common general knowledge as reflected in D12 (page 635, left column, lines 24-28).

In view of this contradiction, the subject-matter of claim 1 also lacked clarity.

Auxiliary request 2

The subject-matter of claim 1 extended beyond the content of the application as filed.

Auxiliary request 3

The subject-matter of claim 1 extended beyond the content of the application as filed. Firstly, it did not require that "the upper section that comprises a clear layer and a color layer" was coextruded and thermoformed together with the first, second and third layer contrary to claims 51 and 52 of the parent application as filed. Secondly, it did not require that the multilayer polymeric structure was of the A/B/A type as disclosed in figure 8 of the application as filed and was therefore an unallowable intermediate generalisation of this figure.

Furthermore, the subject-matter of claim 1 lacked clarity because it required that "the multilayered

polymeric structure is combined with an upper section". The term "is combined" was not a method feature but a product feature with the consequence that it was not clear how it limited the claimed method. Moreover, it was not clear whether the upper section was combined with the multilayered polymeric structure before or after coextrusion and/or thermoforming.

Auxiliary requests 4, 5, 7a, 7b, 8, 9

These requests should not be admitted into the proceedings. Each of these requests contained new features taken from the description of the application as filed, which would require carrying out a new search, something impossible at this late stage of the proceedings. In addition, there would be numerous problems to be dealt with under Article 84 and 123(2) EPC.

Auxiliary request 6

The subject-matter of claim 1 contained the feature "the multilayered polymeric structure is of the A/B/A type" which had been taken from the description. This feature introduced a lack of clarity because the two A layers of the multilayered polymeric structure could either be the same (patent proprietor's letter dated 24 May 2016, page 4, second paragraph) or simply contain the same virgin polyolefin (patent proprietor's letter dated 5 October 2015, page 14, third paragraph). Thus, claim 1 did not fulfil the requirement of Article 84 EPC.

Furthermore, the subject-matter of claim 1 lacked inventive step in view of D3 considered alone. This subject-matter differed from D3 in that the first and

third layer were the same. As no technical effect had been reported to be based on this difference, the technical problem in view of D3 was the provision of an alternative process. D3 would have motivated the skilled person to manufacture of a multilayered polymeric structure with the same first and third layer as shown in figure 3, which represented a typical symmetric multilayered structure. Such symmetric structures were common to the skilled person.

XVI. The appellant (patent proprietor) requested in writing that the decision under appeal be set aside and that the patent be maintained as granted or, alternatively, that the patent be maintained in amended form based on the claims of any of auxiliary requests 1 to 9, auxiliary requests 1 to 3 and 6 filed by letter dated 5 October 2015 and auxiliary requests 4, 5, 7a, 7b, 8 and 9 filed by letter dated 20 December 2018. It also requested that documents D13/D13a, D14, D15 and D16/D16a not be admitted into the proceedings.

XVII. The appellant (opponent) requested that the decision under appeal be set aside and that the patent be revoked in its entirety. It also requested that auxiliary requests 4, 5, 7a, 7b, 8 and 9 not be admitted into the proceedings.

Reasons for the Decision

1. **Main request** (claims as granted)

1.1 The opponent contested, *inter alia*, the novelty of the subject-matter of claim 1 of the main request in view of D3.

1.2 D3 concerns a container with recycled plastic (see the title) which has a multilayered polymeric structure (claim 1). Column 5, lines 39-45, discloses the following structure of five coextruded layers:

HDPE (20%)/Regrind (66%)/ADH (1%)/EVOH (2%)/ADH(1%)/
HDPE (10%)

where,

HDPE : high density polyethylene (column 5, line 27);

regrind: reground polyolefin; (column 5, lines 2-17 and
column 7, lines 10-12);

ADH : modified polyethylene as adhesive (column 5,
lines 45-46);

EVOH: ethyl vinyl alcohol (column 2, lines 48-49).

The first three layers, namely HDPE/Regrind/ADH, correspond to a multilayered polymeric structure as set out in claim 1 of the main request. It would have been immediately apparent to the skilled reader that the polyolefins HDPE and ADH were implicitly virgin polyolefins. If they had been recycled, the skilled reader would have expected D3 to explicitly mention this fact. The regrind is a reground polyolefin, in particular, a PCR (post-consumer recycled) resin composed primarily, if not exclusively, of polyethylene. Thus, D3 discloses the multilayered polymeric structure of claim 1 of the main request.

The multilayered polymeric structure of D3 is made by coextrusion (column 5, lines 39-40) followed by

thermoforming (column 11, lines 53-55). Thermoforming is selected from a list of two alternatives. Thus, D3 also discloses the method steps of claim 1.

1.3 Since claim 1 of the main request lacks novelty in view of D3, the main request is not allowable.

2. Auxiliary request 1

2.1 Claim 1 differs from claim 1 of the main request in that the virgin polyolefin of the first thermoplastic layer, the regrind polyolefin of the second thermoplastic layer and the virgin polyolefin of the third thermoplastic layer are specified and are a "thermoplastic polyolefin".

2.2 During the discussion at the oral proceedings on whether the amendment to "thermoplastic polyolefin" is based on the parent application as filed/application as filed (Articles 76(1)/123(2) EPC), it became apparent that various definitions for "thermoplastic polyolefin" existed.

(i) The patent proprietor (letter of 5 October 2015, paragraph bridging pages 7/8) understood the term "thermoplastic polyolefin" to mean a blend of a polyolefin, an elastomer and a filler, usually abbreviated as TPO. This definition can be found on page 1, lines 21-23 of the parent application as filed.

(ii) In its letter of 19 February 2016, the opponent pointed out that the definition given in the parent application as filed for "thermoplastic polyolefin (TPO)" was in contradiction to the common general knowledge as reflected by the

encyclopaedia D12. D12 defines a "thermoplastic polyolefin (TPO)" as a blend of a polyolefin and an elastomer without the mandatory presence of a filler (page 635, left column).

(iii) Lastly, "thermoplastic polyolefin" may simply describe the behaviour of an olefin polymer as such (i.e. without any elastomer and possible filler being present), for example, polyethylene, propylene or copolymers containing these, to become pliable or mouldable at a certain elevated temperature and to solidify upon cooling. In exactly this context, the term "thermoplastic polyolefin" is used in the parent application as filed (page 13, lines 2-5) and the divisional application as filed (page 23, lines 2-5), where this term concerns exclusively the polyolefin copolymer. Elastomer and filler are disclosed as optional components (parent application as filed: page 13, line 17 and page 14, lines 8-9; divisional application as filed: page 23, line 17 and page 24, lines 8-9).

Since claim 1 does not specify any of the above three interpretations for the term "thermoplastic polyolefin", the amendment to the claim results in a lack of clarity.

2.3 Thus, auxiliary request 1 is not allowable.

3. Auxiliary request 2

3.1 Claim 1 of this request is based on claim 1 as granted (point II), including the following amendment at the end of the claim:

"wherein the regrind polyolefin is produced from scrap or products that do not meet quality control or specifications".

- 3.2 Support for this feature is provided in the description of the parent application as filed (page 26, lines 13-15) and the divisional application as filed (page 36, lines 13-15). However, this feature lacks clarity since neither the claim nor the description define the "quality control" and "specifications". The insertion of this unclear feature into the subject-matter of claim 1 renders it unclear.

Thus, auxiliary request 2 is not allowable.

4. Auxiliary request 3

- 4.1 Compared with claim 1 as granted (point II), claim 1 of auxiliary request 3 contains the additional features:

"wherein the multilayered polymeric structure is combined with an upper section that comprises a clear layer and a color layer".

[emphasis added by the board]

- 4.2 During the oral proceedings before the board, the opponent argued that the subject-matter of claim 1 of auxiliary request 3 extended beyond the content of the parent application as filed and the divisional application as filed.

- 4.2.1 The claims of the parent application as filed do not support the amendment. Reference is made to claims 51 and 52 of the parent application which read as follows:

"51. The method of claim 49 wherein the coextrusion step further comprises coextruding a clear polymeric layer and a colored polymeric layer with the first, second and optionally third thermoplastic layers."

"52. The method of claim 49 further comprising thermoforming the coextruded multilayered polymeric structure."

The method according to the claims of the parent application as filed requires subjecting the whole structure, including the upper section, to coextrusion. Only after coextrusion is thermoforming carried out ("further comprising thermoforming").

This sequence of process steps is, however, no longer required in the method of claim 1 of auxiliary request 3, in which the coextruded multilayer (i.e. minimum three layers) is combined with an upper section after thermoforming.

- 4.2.2 Furthermore, claims 11 and 12 of the divisional application as filed do not support the amendment. Apart from the fact that these claims refer only to a clear polymeric layer (i. e. no reference to a colour layer), the claims refer to the same sequence of method step: first, coextruding the layers (including the clear layer); and then thermoforming the coextruded multilayered structure.
- 4.2.3 Furthermore, the description of the parent application as filed (page 25, lines 12-17) and the divisional application as filed (page 35, lines 12-17) in the passages referring to the figures disclose that the multilayered polymeric structure is combined with an upper section that comprises a clear layer and a colour

layer. Although these passages disclose the term "is combined with", these disclosures are related to the specific multilayered polymeric structure ABA of figure 8. Furthermore, as pointed out by the opponent, these passages describe a (final) structure but provide no information as to how the structure was obtained. Thus, they cannot support the amendment of claim 1, which is clearly directed to a process for making the multilayered polymeric structure.

4.3 In view of the above, claim 1 of auxiliary request 3 contains subject-matter extending beyond the content of the parent application as filed and the divisional application as filed.

4.4 Thus, auxiliary request 3 is not allowable.

5. Auxiliary requests 4, 5, 7a, 7b, 8 and 9

5.1 These requests were filed by letter of 20 December 2018 after the issue of the summons to attend oral proceedings to replace previously filed auxiliary requests 4, 5, 7, 8 and 9, i.e. only about one month before the scheduled oral proceedings.

5.2 The opponent requested that these requests be not admitted into the appeal proceedings because of the complexity of the new subject-matter, the current state of the proceedings and the need for procedural economy.

The board concurs with the opponent that claim 1 of each of the above requests contains new features taken from the description which alter the scope of the respective claim 1. This would require a new search as to the new subject-matter claimed, which could not be accomplished in the short time before the oral

proceedings. Furthermore, there were numerous problems of clarity and added matter to be dealt with, and the amendments considerably shifted the assessment of inventive step. An additional hurdle was that the subject-matter of these requests was not converging.

Apart from the fact that the wording of claim 1 of auxiliary request 4 is, to say the least, rather cumbersome, it appears to further restrict the ethylene content in the clear and colour layer in comparison to claim 1 of the previous auxiliary request 4.

Claim 1 of the new auxiliary request 5 requires just one layer of the polymeric structure to comprise 20 to 40% filler. In claim 1 of the previous auxiliary request 5 the first, second and third thermoplastic layers each had to also comprise 20 to 40% filler.

In previous auxiliary requests 7, 8 and 9, the thermoplastic polyolefin, which was present in the first, second and third thermoplastic layer, had to be a blend of an olefin, an elastomer and a filler, whereas according to the new auxiliary requests 7a, 7b, 8 and 9, just one of these layers has to comprise an elastomer and just one of these layers, which can be the same or different, has to comprise a filler.

5.3 Thus, these requests were not admitted into the proceedings.

6. Auxiliary request 6

6.1 Auxiliary request 6 was submitted at the earliest possible stage in the appeal proceedings, namely, with the statement setting out the grounds of appeal to address issues raised during the oral proceedings

before the opposition division. The opponent did not object to the admission of this request. Nor did the board have a reason to raise an objection of its own.

6.2 Claim 1 of auxiliary request 6 differs from claim 1 as granted (point II) in that the feature "wherein the multilayered polymeric structure is of the A/B/A type", has been added at the end of the claim.

6.3 Clarity

The opponent argued that this feature, which has been taken from the description, rendered the subject-matter of claim 1 unclear. According to the opponent, it was not clear whether the first thermoplastic layer A and the third thermoplastic layer A were the same or they simply comprised the same virgin polyolefin.

The board does not agree. As the patent proprietor explained, a skilled reader would have normally understood that in a three-layer ABA structure, in which the first and third layers were labelled with the same reference sign, the first and third layers were the same.

Thus, claim 1 of this requests fulfils the clarity requirement.

6.4 Inventive step

D3 is considered the closest prior art. The method of claim 1 differs from D3, which also involves the steps of coextrusion and thermoforming, in that it is applied to form a multilayered polymeric structure with a first and third thermoplastic layer which are the same.

There is, however, no evidence in the patent in suit that this leads to a technical effect or advantage. As acknowledged by the patent proprietor (letter dated 24 May 2016, page 7, middle paragraph), the technical evidence of the patent in suit is restricted to the comparison of the claimed three-layer structure with a single-layer structure (where different types of polyolefins are blended together). No evidence was filed comparing the claimed multilayered structure with that of D3, although D3 has always been considered as the closest prior art.

Thus, the technical problem underlying the subject-matter of claim 1 in view of D3 consists in the provision of a method which allows the production of an alternative multilayered polymeric structure. The skilled person starting from D3 would have had no difficulties in applying a method involving coextrusion and thermoforming in the manufacture of a symmetrical multilayered polymeric structure, i.e. with the same first and third thermoplastic layers. This is a common multilayered polymeric structure within the ordinary capabilities of the skilled person. Furthermore, the patent proprietor has not shown that the claimed subject-matter goes against prior art knowledge or prejudices.

Thus, the subject-matter of claim 1 of auxiliary request 6 is obvious in view of D3 with the consequence that this request is not allowable.

7. Since the patent proprietor's requests are either not allowable or not admitted into the proceedings, the patent has to be revoked.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



M. Cañueto Carbajo

W. Sieber

Decision electronically authenticated