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Datasheet for the decision of 24 January 2020

Case Number: T 2591/16 - 3.3.06

Application Number: 01903387.7

Publication Number: 1268891

IPC: D01F6/30, C08L23/12

Language of the proceedings: EN

Title of invention:
FIBERS AND FABRICS PREPARED WITH PROPYLENE IMPACT COPOLYMERS

Patent Proprietor:
ExxonMobil Chemical Patents Inc.

Opponent:
Basell Poliolefine Italia S.r.l.

Headword:
FIBER MADE FROM PP IMPACT COPOLYMER/EXXON

Relevant legal provisions:
EPC Art. 56, 54, 123(2)

Keyword:
Amendments - added subject-matter (no)
Novelty - (yes)
Inventive step - (yes) - unexpected improvement shown

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

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Case Number: T 2591/16 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 24 January 2020

Appellant: (Opponent)	Basell Poliolefine Italia S.r.l. Via Pontaccio 10 20121 Milano (IT)
Representative:	Colucci, Giuseppe Basell Poliolefine Italia S.r.l. Intellectual Property Piazzale G. Donegani 12 44122 Ferrara (IT)
Respondent: (Patent Proprietor)	ExxonMobil Chemical Patents Inc. 5200 Bayway Drive Baytown, TX 77520 (US)
Representative:	Uexküll & Stolberg Partnerschaft von Patent- und Rechtsanwälten mbB Beselerstraße 4 22607 Hamburg (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 28 September 2016 rejecting the opposition filed against European patent No. 1268891 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	J.-M. Schwaller
Members:	P. Ammendola
	C. Heath

Summary of Facts and Submissions

I. The appeal was filed by the opponent (hereinafter the "appellant") against the decision of the opposition division to reject the opposition filed against European patent Nr. 1 268 891.

II. With its statement of grounds of appeal the appellant *inter alia* filed D7 (*Encyclopedia of polymer science and engineering*, Wiley-Interscience Publ., vol. 13, 1988, p. 479) and disputed the findings of the opposition division that the granted claims were novel over D1 (EP 0632148 A2) and D2 (EP 0552810 A2), and involved an inventive step vis-à-vis D1.

III. With its reply dated 20 June 2017 the patent proprietor (hereinafter the "respondent") filed *inter alia* a set of amended claims labelled "Set B'" as **Auxiliary Request 2**, with claim 1 thereof reading as follows (the amendments vis-à-vis claim 6 of the application as filed are made apparent):

"*1. A fiber ~~comprising~~ **consisting essentially of** a reactor produced propylene impact copolymer composition ~~comprising:~~ **of***

*a) from ~~about~~ 60% to ~~about~~ 90% by weight Component A based on the total weight of the impact copolymer, **wherein** Component A ~~comprising~~ **is** a propylene homopolymer; and*

*b) from ~~about~~ 10% to ~~about~~ 40% by weight Component B based on the total weight of the impact copolymer, **wherein** Component B ~~comprising~~ **is** a propylene/comonomer copolymer wherein the copolymer*

comprises from ~~about~~ 20% to ~~about~~ 70% by weight propylene and from ~~about~~ 30% to ~~about~~ 80% by weight comonomer ***and wherein the comonomer is selected from the group consisting of ethylene, butene, hexene and octene.***"

Claims 2 to 9 define preferred embodiments of the fiber of claim 1.

IV. At the oral proceedings before the board, the respondent maintained only auxiliary request 2 and the appellant specified for the first time its objections against this request, namely by submitting that its claim 1 contravened Article 123(2) EPC and was neither novel nor inventive over D1 or D2.

The respondent disputed the admissibility into the proceedings of the novelty and inventive step objections, as they had unjustifiably been raised for the first time at the oral proceedings.

V. At the closure of the debate, the parties' final requests were as follows:

The **appellant** requested that the patent be revoked.

The **respondent** requested that the patent be maintained in amended form on the basis of claims 1 to 9 (Set B') according to Auxiliary Request 2 filed with the reply to the grounds of appeal of 20 June 2017.

Reasons for the Decision

1. Auxiliary Request 2 - Allowability of the amendments

1.1 The appellant's only objection of added subject-matter was directed against claim 1 of this request. Even though the wording of such claim largely corresponded to that of claim 6 of the application as filed, there would be no disclosure in the original documents that justified the replacement of the first two "*comprising*" originally present in claim 6 as filed by respectively "*consisting essentially of*" and "*of*".

1.2 It is undisputed that claim 6 as filed defines a fiber comprising a "*reactor produced propylene impact copolymer composition*" (hereinafter "***reactor produced***" **ICP**) that comprises the specified Components A and B.

1.3 The board notes however that all the fibers of the invention exemplified in the application as filed (i.e. those based on "*polymer E*", "*polymer F*", "*polymer G*" and "*polymer K*" further described in Tables 1 and 2) are exclusively made of a "*reactor produced*" ICP made of Components A and B only. If only for this reason the skilled reader of the original application necessarily concludes that the same ingredients actually described as "comprised" in the fiber of original claim 6 are also implicitly, but nevertheless directly and unambiguously disclosed in the application as filed as being the sole constituents of the fiber of the invention.

1.4 Thus, the board finds the fact that claim 1 is now limited to a fiber "*consisting essentially of a reactor produced propylene impact copolymer composition of*" the specified Components A and B does not result in

addition of subject-matter vis-à-vis the disclosure of the application as filed and thus, that amendments resulting in such claim do not contravene Article 123(2) EPC.

2. Construction of claim 1 at issue

2.1 The appellant argued that the wording "*reactor produced*" in the expression "*reactor produced propylene impact copolymer composition*" of claim 1 would not produce any limitation of the claimed subject-matter, since there was no evidence on file that such process feature might result in distinctive properties of the claimed product. Hence, the fiber that was directly obtainable from a "*reaction produced*" ICP of these Components was also obtainable e.g. when (part or the whole of) one of Components A and B is firstly separately synthesised and then compounded with the other Component by melt blending. Hence, the wording "*reactor produced*" embraced any fiber made of the specified Components A and B, regardless of the process used for its production.

2.2 The board notes the undisputed fact that the characterisation of the ICP as "*reactor produced*" is easily understood by the skilled person reading claim 1, who is also aware of the common general knowledge referred to in the second paragraph on page 479 of D7 that "*Impact-resistant copolymers usually contain 60—90% homopolymer and an ethylene—propylene copolymer rubber .... were first produced by mechanical blending of two components. Today they are synthesized directly in a multistage process* ***to obtain a better distribution*** *of the elastomeric phase in the polypropylene matrix and* ***thus better quality*** *(emphasis added by the board)*"). Thus, it is apparent to the skilled reader of

claim 1 that the definition of the ICP as "*reactor produced*" aims at expressing the requirement that the ICP must be directly obtainable in a multistage polymerisation process, i.e. a process in which one Component is synthesised in the presence of the other and not e.g. by melt blending separately synthesised components. This is consistent with the description in paragraph [0020] of the patent that the two components are "*interpolymerized*" as well as with the indication on the nature of the invention in paragraph [0007] reading: "*Though a variety of properties can be obtained, the use of blends such as these has the primary disadvantages associated with the additional processing steps required to make and use blended materials. We have discovered that many of these same properties can be obtained using a propylene impact copolymer which is not post reactor blended*" (emphasis added by the board).

2.3 The board finds plausible the respondent's argument that any ICP directly obtainable in a multistage polymerisation process (i.e. by forming at least in part one of Components A and B in the presence of the other) will inevitably display a more intimate intermixing of the different sorts of macromolecules, so to say at "molecular level". On the contrary, a less intimate dispersion of the two different sorts of macromolecules is expected to be obtainable in a conventional melt blending step. Accordingly the fibers that claim 1 defines as consisting essentially of a "*rector produced*" ICP of Components A and B may reasonably be predicted to have distinctive properties, different from those of the fibers that can be formed from a blend obtained melt blending similar Components previously separately synthesised.

2.4 The fact that this predictable difference in the level of dispersion of the two sorts of macromolecules (between the "*reactor produced*" ICPs of Components A and B and those produced by melting blending said two Components) is so substantial to produce distinctive properties, is implicitly confirmed by the passage of D7 cited above, and stating that the direct synthesis in a multistage process produces "a better distribution of the elastomeric phase in the polypropylene matrix and thus better quality" (emphasis added by the board).

2.5 In view of the above the board concludes that, in the absence of any evidence to the contrary, the qualification of the ICP in claim 1 as "*reactor produced*" results in a substantial limitation to those fibers that are directly made from a "*reactor produced*" ICP of Components A and B, and so excludes from the claimed subject-matter the fibers formed by melt blending the previously separately synthesised Components.

3. Novelty (Articles 52(1) and 54 EPC) over D1 or D2

3.1 These objections have been raised for the first time at the oral proceedings, but given that the reasons are substantially the same as those raised in the grounds of appeal against claim 1 as granted, the board finds that the respondent must already have considered the possible relevance of these objections in respect of Auxiliary Request 2, when it decided to file such request in reply to the grounds of appeal.

Thus, the board using its discretion under Article 13(3) RPBA 2007 has decided to admit the novelty objections to claim 1 based on D1 and D2 into the appeal proceedings.

3.2 In the appellant's view the prior art disclosed in D1 and D2 anticipated the subject-matter of claim 1 under consideration because the qualification in claim 1 of the ICP of Components A and B as "*reactor produced*" represented no limitation of the claimed subject-matter and thus, this latter also encompassed fibers made of compositions prepared by e.g. melt blending previously separately synthesised Components A and B. Accordingly, the appellant referred to teachings in D1 (e.g. claim 1 or Example 7 in combination with page 2, lines 37 to 48) and D2 (e.g. Example 7 in combination with page 5, lines 19 to 22) explicitly acknowledging that these teachings disclosed fibers made from a melt blend of previously separately synthesised Components.

3.3 For the board, these objections fail if only for the reason that, as indicated above, claim 1 does not embrace fibers that can be made from a blend of the Components A and B.

3.4 The board finds therefore that the subject-matter of claim 1 is novel over the cited prior art and, thus, that this claim complies with the requirements of Article 54 EPC.

4. Inventive step (Articles 52(1) and 56 EPC)

4.1 Admission of the objection based on D1 into the appeal proceedings

This objection against claim 1 at issue has been raised for the first time at the oral proceedings, but given that the reasons are substantially the same as those already raised in the grounds of appeal against claim 1 as granted, the board finds that the respondent must already have considered the possible relevance of this

objection in respect of the Auxiliary Request 2, when it decided to file such request in reply to the grounds of appeal.

Thus, the board using its discretion under Article 13(3) RPBA 2007 has decided to admit it into the appeal proceedings.

4.2 Closest prior art

It is common grounds among the parties that Example 7 of D1 represents a suitable starting point for the assessment of inventive step. The board sees no reason to take a different stance.

4.3 The technical problem addressed

The patent in suit (compare paragraph [0001] with the data relating to "*Maximum TD Peak elongation*" in Tables 1 and 2) relates to fibers made from "reactor produced" ICP suitable for the production of non-woven fabrics with "*improved elongation properties*" in particular improved maximum elongation. Accordingly, the technical problem addressed can be identified in the provision of fibers suitable for the production of nonwoven fabrics having improved elongation.

4.4 The solution proposed is a fiber consisting essentially of a "*reactor produced*" ICP, wherein 60% to 90% by weight of the "reactor produced" ICP is a propylene homopolymer defined as "*Component A*", and the remaining 10% to 40% by weight of the "*reactor produced*" ICP is a propylene/comonomer copolymer also defined as "*Component B*". Moreover claim 1 requires that propylene must constitute from 30 to 80 % by weight of the

Component B and that the comonomer in this latter is selected from ethylene, butene, hexene and octene.

4.5 Success of the solution

4.5.1 The board notes that the subject-matter of claim 1 differs from the prior art of departure, *inter alia*, in that the claimed fiber is only made of a "*reactor produced*" ICP, whereas the fiber of Example 7 of D1 is prepared from a blend of an ICP (the "heterophasic polymer A" of Table 2 of D1) with propylene homopolymer (see also Table 4 of D1).

As pointed out by the respondent, the relevance of this difference in view of the technical problem addressed is apparent when comparing the values of "*Maximum TD Peak Elongation (%)*" reported in Table 1 of the patent in suit in particular for the invention example based on "*polymer E*" and the comparative example based on "*polymer J(C)*" which, as derivable from the description in paragraph [0041], differs from the invention example based (only) on "*polymer E*" in that the used "*polymer J(C)*" is a blend of the same "*reactor produced*" ICP used in Example "*E*" with a "*commercial homopolymer*". Such comparison shows that the additional presence in the comparative fiber of a homopolymer (most plausibly a polypropylene homopolymer) melt-blended with the "*reactor produced*" ICP, i.e. the difference also distinguishing the claimed subject-matter from the prior art of departure, results in a substantially lower elongation.

Hence, this experimental comparison renders plausible that the subject-matter of claim 1 solves the posed technical problem also vis-à-vis the prior art of D1.

4.5.2 The appellant objected to the above reasoning by stressing that the subject-matter of claim 1 encompassed the possibility that e.g. (a part of) the propylene homopolymer (Component A) was not already present in the "*reactor produced*" ICP but could also be subsequently compounded therewith by melt blending, as in Example 7 of D1. Hence, this difference in the process for combining the Components A and B did not represent a feature distinguishing the claimed fiber from that of the prior art.

It is immediately apparent to the board that this line of argument is based on an erroneous construction of claim 1 (see above) and thus not convincing.

4.5.3 The appellant's further submissions were directed at disputing the meaningfulness of the comparison of experimental data in Table 1 of the patent in suit pointed out by the respondent. In particular, it stressed that:

(a) even though the invention example based on "*polymer E*" showed a higher "*Maximum TD Peak Elongation*" in comparison with that of comparative example based on "*polymer J(C)*", this latter displayed a higher "*Maximal TD Peak Load*", which would also be considered an aspect of the aimed "improved elongation", and

(b) even though the "*polymer J(C)*" used in the comparative example had been described in paragraph [0041] to be a blend made by using the same "*polymer E*" (i.e. the same "*reactor produced*" ICP) used for forming the fiber of the invention example, the "*% EPR (comp. B)*" value reported for

"*J(C)*" in Table 1 was different from that reported for "*E*".

4.5.4 For the board none of these objections is sufficient at concluding that the technical problem addressed is not solved, for the following reasons.
Objection (a) appears to be based on the allegation that a skilled person aiming at improving the elongation properties of the prior art would also necessarily aim at achieving an improved "Maximal Peak Load". The board, noting that this allegation is not supported by any evidence and has been disputed by the respondent, finds such allegation unconvincing.

Objection (b) is too vague and/or incomplete to allow any sound conclusion as to the actual relevance and/or the possible origin of the discrepancy between the description of the nature of "*polymer J(C)*" in paragraph [0041] and the difference in the "*% EPR (comp. B)*" values in Table 1 for the fibers made of "*polymer E*" and of "*polymer J(C)*". Moreover, the board notes that identical values are given for the "*% Ethylene in Component B*" for the two fibers, in accordance with paragraph [0041]. Thus, the board finds the difference in the "*% EPR (comp. B)*" values in Table 1 insufficient at depriving of plausibility the clear description of the nature of "*polymer J(C)*" in paragraph [0041] and thus insufficient at jeopardizing the validity of the reasoning at 4.5.1 above.

4.5.5 Accordingly, the board comes to the conclusion that the subject-matter of claim 1 solves the posed technical problem.

4.6 Non-obviousness of the solution

The board notes the undisputed fact that D1 does not mention at all fiber "elongation" and that the appellant has neither alleged the existence of common general knowledge, nor referred to specific teachings in published documents, that could possibly motivate the skilled person aiming at improving the elongation of the fiber of Example 7 of D1 to consider one of the modifications of this example necessary for arrive at the subject-matter of claim 1, namely to consider the possibility of making the fiber by only using a "*reactor produced*" ICP instead of a blend of a ICP with a separately synthesised polypropylene homopolymer.

Hence, if only for this reason, the board finds that it was not obvious for the skilled person, starting from this prior art and aiming at solving the posed technical problem, to modify Example 7 of D1 so as to arrive at the subject-matter of claim 1 at issue.

4.7 The board finds therefore that the subject-matter of claim 1 involves an inventive step over the cited prior art and, thus, that this claim also complies with the requirements of Article 56 EPC.

5. Non-admission of the objection of lack of inventive step based on D2

This objection against claim 1 at issue has been raised for the first time at the oral proceedings, and the appellant admitted not to have substantiated any inventive step objection based on D2 in the statement of grounds of appeal, but considered such new objection to be admissible at the oral proceedings because it was based on the same teachings of this citation that the appellant had identified in the grounds of appeal as novelty destroying for claim 1 as granted.

The respondent requested not to admit this new objection because of its unjustified lateness. It also stated not to be in a position to properly address this belated objection at the oral proceedings.

The board notes that the appellant failed to provide any reason as to why this objection had only been raised at the oral proceedings.

Moreover the teachings in D2 that the appellant has identified to substantiate its objection of lack of novelty in the statement of grounds of appeal (i.e. Example 7 of D2 possibly in combination with page 5, lines 19 to 22) also relate to fibers made from a blend obtained by melt blending a polypropylene homopolymer with a ICP and D2 does not mention at all the property of fiber elongation. Thus, the prior art disclosed in D2 does not appear manifestly more relevant than that disclosed in D1.

Finally, it is plausible that the respondent would not have been in a position to properly reply to such new objection at the oral proceedings.

Accordingly, the board using its discretion under Article 13(3) RPBA 2007 decided not to admit this line of argument into the appeal proceedings.

6. The above reasons for the findings that the subject-matter of claim 1 is novel and involves an inventive step over the cited prior art apply identically to the subject-matter of the remaining claims 2 to 9 of the sole pending request, which define preferred embodiments of the fiber of claim 1.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent on the basis of the set of claims 1 - 9 ("Set B'") according to Auxiliary Request 2 filed with the reply to the grounds of appeal of 20 June 2017 and a description to be adapted thereto.

The Registrar: The Chairman:

A. Pinna J.-M. Schwaller

Decision electronically authenticated