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Datasheet for the decision of 13 April 2022

Case Number: T 0722/19 - 3.3.03

Application Number: 12193064.8

Publication Number: 2733175

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Language of the proceedings: EN

Title of invention:
Random propylene copolymer for bottles with good optical properties and low hexane content

Patent Proprietor:
Borealis AG

Opponent:
Basell Poliolefine Italia S.r.l.

Relevant legal provisions:
RPBA Art. 12(4)
EPC Art. 56

Keyword:
Late filed documents - admittance
Inventive step - (yes)

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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 0722/19 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 13 April 2022

Appellant: (Opponent)	Basell Poliolefine Italia S.r.l. Via Pontaccio 10 20121 Milano (IT)
Representative:	LyondellBasell c/o Basell Poliolefine Italia Intellectual Property P.le Donegani 12 44122 Ferrara (IT)
Respondent: (Patent Proprietor)	Borealis AG Trabrennstrasse 6-8 1020 Vienna (AT)
Representative:	Lux, Berthold Maiwald Patentanwalts- und Rechtsanwaltsgesellschaft mbH Elisenhof Elisenstraße 3 80335 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 10 January 2019 rejecting the opposition filed against European patent No. 2733175 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	D. Semino
Members:	D. Marquis
	W. Ungler

Summary of Facts and Submissions

I. The present appeal lies against the decision of the opposition division rejecting the opposition against European patent No. 2 733 175.

II. The independent claims 1 and 3 as granted read as follows:

"1. Propylene copolymer having
(a) a melt flow rate MFR_2 (230 °C) measured according to ISO 1133 in the range of more than 0.8 to below 2.5 g/10min,
(b) a xylene cold soluble content (XCS) determined according ISO 16152 (25 °C) in the range of 25.0 to 35.0 wt.-%, and
(c) a comonomer content in the range of more than 4.5 to 10.0 wt.-%, wherein further
(d) the comonomer content of xylene cold soluble (XCS) fraction of the propylene copolymer is in the range of 12.0 to 22.0 wt.-%, and
(e) the intrinsic viscosity (IV) determined according to DIN ISO 1628/1 (in decalin at 135 °C) of the xylene cold soluble (XCS) fraction of the propylene copolymer is in the range of more than 1.5 to below 3.0 dl/g".

"3. Propylene copolymer having
(a) a melt flow rate MFR_2 (230 °C) measured according to ISO 1133 in the range of more than 0.8 to below 2.5 g/10min,
(b) a xylene cold soluble content (XCS) determined according ISO 16152 (25 °C) in the range of 25.0 to 35.0 wt.-%, and
(c) a comonomer content in the range of more than 4.5

to 10.0 wt.-%, wherein further
(d) the comonomer content of xylene cold soluble (XCS) fraction of the propylene copolymer is in the range of 12.0 to 22.0 wt.-%, and
(e) the xylene cold insoluble (XCI) fraction of the propylene copolymer has a polydispersity (Mw/Mn) of more than 4.9 to 10.0".

III. The decision of the opposition division was based *inter alia* on document D3 (WO 03/046021 A1).

IV. The decision of the opposition division can be summarized as follows:

- D3 disclosed visbroken materials for products with good optical properties and represented the closest prior art. Granted claim 1 of the patent in suit differed from the visbroken composition of examples 1-3 of D3 at least in the melt flow rate and the comonomer content of the xylene cold soluble fraction.

- The problem solved was the provision of a polypropylene copolymer for use in blow molding application.

- None of the cited documents suggested to modify the melt flow rate and/or the comonomer content of xylene cold soluble in order to solve the above problem. In fact, D3 taught that good optical properties and a low hexane content were only obtained if the propylene copolymer was degraded in order to increase the melt flow rate above 3 g/10 min. The granted claims involved therefore an inventive step over D3.

V. The opponent (appellant) lodged an appeal against that decision. D11 (Declaration Mr. Tartari dated 20 May 2019) and D12 (Handbook of Polypropylene and Polypropylene Composites, Second Edition, Harutun G.Karian, Taylor & Francis e-Library, 2009, page 26) were filed with the statement setting out the grounds of appeal.

VI. The patent proprietor (respondent) filed six sets of claims as first to third auxiliary requests and first to third auxiliary requests B and documents D13-D16 with their reply to the statement of grounds of appeal.

VII. Oral proceedings were held on 13 April 2022.

VIII. The appellant requested that the decision of the opposition division be set aside and the patent be revoked.

IX. The respondent requested that the appeal be dismissed (main request), in the alternative that the patent in suit be maintained in the form of one of the first to third auxiliary requests or alternatively one of the first to third auxiliary requests B all submitted with the reply to the statement setting out the grounds of appeal.

X. The arguments of the appellant may be summarized as follows:

Admittance of documents

- D11 was a rework of the composition of example 3 of D3 that should be admitted into the appeal proceedings.

- D12 represented the common general knowledge and should be admitted into the appeal proceedings.

Inventive step

- The visbroken composition of example 3 of D3 represented the closest prior art. Claim 1 of the main request differed from the composition of example 3 of D3 in the melt flow rate and the comonomer content of the xylene cold soluble fraction. No effect was shown for those features. The problem was the provision of alternative propylene compositions suitable for blow molding applications. D12 taught that for blow molding applications the melt flow rate had to be of about 2 g/10min. That value could be obtained with an appropriate visbreaking of the precursor of the composition. The choice of the comonomer content of the xylene cold soluble fraction was arbitrary. D3 already disclosed ranges overlapping with the range defined in granted claim 1. When modifying these features, the other features of the composition would stay in the ranges defined in claim 1 of the main request. A similar reasoning applied to claim 3 as granted. Granted claims 1 and 3 lacked therefore an inventive step over D3.

XI. The arguments of the respondent may be summarized as follows:

Admittance of documents

- D11 should have been filed in the first instance proceedings. D12 was therefore late filed and should not be admitted into the appeal proceedings.

- There was no objection against the admittance of D12.

Inventive step

- D3 was not in the same technical field of application of blow molding as the patent in suit. D3 was remote to the patent in suit but it could nevertheless be considered as the closest prior art. Granted claim 1 not only differed from the composition of example 3 of D3 in the melt flow rate and in the comonomer content of the xylene cold soluble fraction, but also in xylene cold soluble content as well as in the intrinsic viscosity of the xylene cold soluble fraction. Granted claim 3 differed from example 3 of D3 in the melt flow rate, the xylene cold soluble content, the comonomer content of the xylene cold soluble fraction as well as the polydispersity of the xylene cold insoluble fraction. The problem was to provide a polypropylene composition which is suitable to obtain extrusion blow molded articles having good optical properties and low extractables. The teaching of D12 concerned polymers that did not correspond to the heterophasic compositions of the patent in suit. Applying the teaching of D12 to D3 could only be done with hindsight. Granted claims 1 and 3 involved therefore an inventive step.

Reasons for the Decision

1. Admittance of documents

1.1 D11 and D12 were filed by the appellant with the statement setting out the grounds of appeal.

1.2 D11 is a declaration containing a rework of example 3 of D3 which is intended to show that the visbroken composition of example 3 of D3 fulfilled the conditions (b), (c) and (e) as defined in granted claim 1. It is clear from the reply of the patent proprietor to the notice of opposition dated 3 November 2017 (page 6, section 5.3) that that point had already been contested at the very beginning of the opposition procedure. There is thus no apparent reason as to why D11 was first filed in the appeal proceedings and not earlier in the opposition proceedings nor was such a reason provided by the appellant. The Board considers therefore that D11 should have been filed in opposition proceedings and thus finds it appropriate to exercise its discretion under Article 12(4) RPBA 2007 (which applies in view of Article 25(2) RPBA 2020) by not admitting D11 into the appeal proceedings.

1.3 D12 is filed to show the common general knowledge in extrusion blow molding and was filed in reply to a point regarding inventive step first made in the decision of the opposition division (page 9, fifth paragraph). The filing of D12 can be seen therefore as a legitimate reaction to the decision and the Board finds it appropriate to exercise its discretion under Article 12(4) RPBA 2007 (which applies in view of Article 25(2) RPBA 2020) by admitting D12 into the

appeal proceedings.

1.4 The admittance of further documents (D13-D16) was discussed and decided upon at the oral proceedings before the Board but since these documents are not relevant to the present decision, there is no need to deal with the issue in any further detail.

2. Inventive step

2.1 The patent in suit concerns propylene copolymers for extrusion blow molded articles (paragraph 1) and in particular bottles (paragraph 67). The propylene copolymers according to granted claims 1 and 3 have a melt flow rate (MFR_2 as defined in claim 1) of more than 0.8 to below 2.5 g/10min.

2.2 The decision of the opposition division was based on D3 as the closest prior art. D3 concerns the preparation of propylene polymer compositions that are particularly suitable for the manufacture of films (second paragraph, page 1). The propylene compositions of D3 have a melt flow rate from 3 to 30 g/10min and are composed of one or more propylene copolymer(s) (A) and a copolymer of propylene and ethylene (B) (claim 1).

2.3 Although the patent in suit and D3 concern different end applications, both parties considered in appeal that D3 and in particular its example 3 represented the closest prior art. The cast film prepared in example 3 of D3 is based on a propylene composition prepared by polymerizing propylene and ethylene under continuous conditions in a plant comprising a gas-phase polymerization apparatus and then subjected the thus obtained composition to degradation (visbreaking) to produce a final composition (page 11, lines 3-6). The

properties of the visbroken propylene composition are reported in Table 1 of D3. The melt flow rate of the visbroken propylene composition is 6.9 g/10min.

2.4 On the basis of the data in Table 1 of D3 both parties acknowledged that the copolymers of claim 1 and 3 differ from the one of example 3 of D3 in the value of the melt flow rate MFR_2 (230°C) and in the comonomer content of the xylene cold soluble fraction. Granted claims 1 and 3 define a melt flow rate MFR_2 (230°C) in the range of more than 0.8 to below 2.5 g/10 min (the value of melt flow rate is 6.9 g/10min for example 3 of D3) and a comonomer content of the xylene cold soluble fraction in the range of 12.0 to 22.0 wt.-% (the value for the precursor of the composition of example 3 of D3 is 23.5 wt.-%).

2.5 In addition to the melt flow rate MFR_2 (230°C) (feature (a) in granted claims 1 and 3) and the comonomer content of the xylene soluble cold fraction (feature (d) in granted claims 1 and 3), the respondent also argued that the xylene cold soluble (XCS) content (feature (b) in granted claims 1 and 3), the intrinsic viscosity (IV) of the xylene cold soluble (XCS) fraction (feature (e) in granted claim 1) and the polydispersity of the xylene cold insoluble (XCI) fraction of the propylene copolymer (feature (e) in granted claim 3) constituted further distinguishing features over the composition of example 3 of D3, which was disputed by the appellant. As the Board however arrives at the conclusion that the subject-matter of granted claims 1 and 3 is inventive over D3 already on the basis of the acknowledged differences, there is no necessity to consider features (b) and (e) in the assessment of inventive step.

2.6 Paragraph 14 of the patent in suit sets out that the problem was to provide propylene copolymers having a high bottle appearance factor (BAF), a parameter that is related to the optical properties of the propylene composition, and relatively low hexane solubles. It is also apparent from Table 2 of the patent in suit that compositions according to granted granted claims 1 and 3 (IE1 and IE2) have high BAF values in combination with low hexane solubles. This combination of properties however cannot be attributed specifically to the melt flow rate MFR_2 (230°C) and the comonomer content of the xylene cold soluble fraction being in the ranges defined in granted claims 1 and 3 since the comparative compositions also have a melt flow rate MFR_2 (230°C) and a comonomer content of the xylene cold soluble fraction according to granted claims 1 and 3. The problem over D3 is thus the provision of alternative propylene compositions for blow molded articles with satisfactory optical properties and low hexane solubles.

2.7 The appellant argued that starting from the visbroken propylene composition applied to films in example 3 of D3 the skilled person knew that the melt flow rate of the composition had to be adapted to use it for blow molding applications. To this aim the appellant cited document D12 which concerned propylene compositions for blow molding applications and taught that the melt flow rate of choice for propylene homopolymers and random copolymers was about 2 g/10min for extrusion blow molding (page 26, section 2.9.6, third paragraph). D12 therefore taught a melt flow rate according to granted claim 1 for the application described in the patent in suit.

2.8 The Board cannot agree to this approach. The closest prior art D3 is a document directed to propylene compositions that are heterophasic propylene compositions used for making films. To that effect the propylene composition must be subjected to a chemical degradation treatment (visbreaking) in order to increase its melt flow rate to the desired range of 3-30 g/10min (fifth paragraph on page 1 and third full paragraph on page 2). By contrast, the passage on extrusion blow molding in D12 is of a generic nature and does not concern heterophasic propylene compositions (homopolymers and random copolymers are cited in D12), nor possible modifications of compositions produced for other purposes. The skilled person starting from D3 would thus have no reason to consider the generic teaching of D12 concerning different propylene polymers as those disclosed in D3 for a different application, all the more as the range of melt flow rate taught in D3 excludes the one taught in D12.

2.9 Thus, it is only with the benefit of hindsight that a skilled person would adjust the melt flow rate of the propylene composition of example 3 of D3 from 6.9 g/10min to a value in the range of more than 0.8 to below 2.5 g/10min in view of the disclosure of D12 as argued by the appellant. On the basis of this conclusion, there is no need to consider any further feature (including the comonomer content of the xylene cold soluble fraction).

2.10 In view of the above the board concludes that the subject-matter of granted claims 1 and 3 meets the requirements of Article 56 EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

B. ter Heijden D. Semino

Decision electronically authenticated