

Internal distribution code:

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

**Datasheet for the decision
of 3 May 2016**

Case Number: T 0089/13 - 3.3.03

Application Number: 06755094.7

Publication Number: 1879931

IPC: C08F210/06

Language of the proceedings: EN

Title of invention:

PROPYLENE-ETHYLENE COPOLYMERS AND PROCESS FOR THEIR
PREPARATION

Patent Proprietor:

Basell Poliolefine Italia S.r.l.

Opponents:

W.R. Grace & Co.-Conn.
Borealis Technology OY

Headword:

Relevant legal provisions:

EPC Art. 83,111(1)

Keyword:

Sufficiency of disclosure and clarity requirements
Appropriate criteria for assessing sufficiency of disclosure
not considered in the decision
Remittal to the department of first instance

Decisions cited:

G 0002/98

Catchword:



Beschwerdekammern
Boards of Appeal
Chambres de recours

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 0089/13 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 3 May 2016

Appellant: Basell Poliolefine Italia S.r.l.
(Patent Proprietor) Via Soperga, 14/A
20127 Milano (IT)

Representative: Giberti, Stefano
Basell Poliolefine Italia S.r.l.
Intellectual Property
P.le Privato Donegani 12
44100 Ferrara (IT)

Respondent: W.R. Grace & Co.-Conn.
(Opponent 1) 7500 Grace Drive
Columbia, MD 21044-4098 (US)

Representative: V.O.
P.O. Box 87930
2508 DH Den Haag (NL)

Respondent: Borealis Technology OY
(Opponent 2) P.O.Box 330
06101 Porvoo (FI)

Representative: Schindele, Claus
Kador & Partner
Corneliusstraße 15
D-80469 München (DE)

Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 14 November
2012 revoking European patent No. 1879931
pursuant to Article 101(3) (b) EPC.**

Composition of the Board:

Chairman M. C. Gordon
Members: F. Rousseau
 R. Cramer

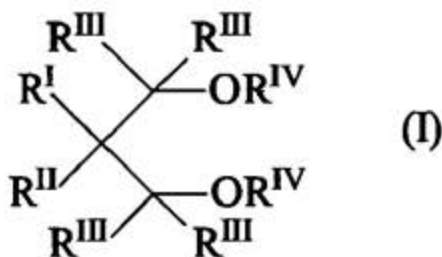
Summary of Facts and Submissions

- I. The appeal by the patent proprietor (appellant) lies from the decision of the Opposition Division posted on 14 November 2012 according to which European patent No. 1 879 931 was revoked.
- II. The European patent was granted on the basis of 10 claims, independent claims 1 and 9 of which read as follows:

"1. Propylene/ethylene copolymers characterized by

- Ethylene content in the range of 4.5-7%wt;
- Mw/Mn (via GPC) in the range 3.5-5.5;
- Mz/Mw (via GPC) lower than 4;
- absence of 2-1 regioinversion, and
- Melting Temperature (Tm) (non-nucleated grade) lower than 143°C.

9. Process for the preparation of the propylene/ethylene copolymers of claim 1 carried out in a slurry of liquid propylene as a polymerization medium and in the presence of a catalyst system comprising a solid catalyst component comprising at least one titanium compound having at least one titanium-halogen bond and at least an electron-donor compound (internal donor), both supported on magnesium chloride compound said electron donor compound being selected from 1,3-diethers and in particular from those of formula (I)



where R^I and R^{II} are the same or different and are hydrogen or linear or branched C₁-C₁₈ hydrocarbon groups which can also form one or more cyclic structures; R^{III} groups, equal or different from each other, are hydrogen or C₁-C₁₈ hydrocarbon groups; R^{IV} groups equal or different from each other, have the same meaning of R^{III} except that they cannot be hydrogen; each of R^I to R^{IV} groups can contain heteroatoms selected from halogens, N, O, S and Si."

Claims 2 to 8 and claim 10 define preferred embodiments of product claim 1 and process claim 9, respectively.

III. Two oppositions were filed requesting revocation of the patent in its entirety on the grounds that its subject-matter lacked novelty and an inventive step (Article 100(a) EPC), and that the invention was not disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b)).

IV. The following evidence was *inter alia* referred to during the opposition proceedings:

D15: EP-B-341724

D17: Figure 12 submitted with the notice of opposition of opponent 1

D18: WO-A-9731954 and US-B-6693161

D20: Propylene handbook, Edited by E.P. Moore Jr., Hanser publishers, Munich, 1996, pages 56 to 58, 244, 245 and 404 to 406

D28: V. Busico et al., Propylene/Ethylene-[1-¹³C] Copolymerization as a Tool for Investigating Catalyst Regioselectivity, MgCl₂/Internal Donor/TiCl₄-External Donor/AlR₃ Systems, *Macromolecules*, 2004, 37, pages 7437 to 7443 and

D31: J. Randall, Polymer Sequence Determination, Carbon-13 NMR Method, Academic Press, Inc. 1977, pages 53-58 and 135-138.

- V. The impugned decision was based on the patent documents as granted.
- VI. According to the reasons of the contested decision, D31 was introduced into the proceedings. One essential requirement of the claimed subject-matter was that the propylene/ethylene copolymer had no 2-1 regioinversion, which according to paragraph [52] of the specification was calculated on the basis of the relative concentration of $S_{\alpha\beta} + S_{\beta\beta}$ using a specific ^{13}C -NMR method. However, the patent in suit did not indicate up to what relative concentration of $S_{\alpha\beta} + S_{\beta\beta}$ the 2-1 regioinversion was to be considered as absent, meaning that the skilled person was not able to determine whether he was working within the area covered by claim 1. Applying the rationale of decision T 0611/02, it was concluded that the invention was not disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. The patent was therefore revoked. The grounds for opposition under Article 100(a) EPC were not dealt with.
- VII. With the statement setting out the grounds of appeal filed on 18 March 2013, the appellants submitted a declaration of Mr. Piemontresi (D35).
- VIII. Opponents 1 and 2 (respondents) replied to the statement of grounds of the appeal by letters of 17 July 2013 and 31 July 2013, respectively. The submissions of opponent 2 referred to a written opinion of Mr. Parkinson of 8 July 2013 (D36) and to an article

of A. Tynys *et al*, in *Macromolecules*, 2012, 45(19), pages 7704-7710 (D37).

- IX. Further submissions concerning the substance of the case were made by opponent 1 with letter of 1 August 2013.
- X. The parties were informed with a communication of 7 September 2015 that the status of opponent 1 had been transferred from the Dow Chemical Company to W. R. Grace & CO.- Conn as from 29 July 2015, following a request for transfer of opposition submitted with letter of 29 July 2015.
- XI. The parties were summoned to oral proceedings with letter of 7 September 2015.
- XII. Opponent 2 made further submissions relating to the substance of the case with letter of 1 April 2016
- XIII. In preparation of the oral proceedings, the Board issued a communication on 22 April 2016.
- XIV. Further submissions by opponent 2 to the substance of the case were made with letter of 29 April 2016.
- XV. Oral proceedings were held on 3 May 2016, at the end of which the decision was announced.
- XVI. The appellant's arguments, as far as relevant for the present decision, can be summarized as follows:
- (a) The objection raised by the respondents was an objection for lack of clarity, which did not have any impact on sufficiency. Concerning the absence of 2-1 regioinversion, that feature meant that 2-1

regioinversion should not be detectable. In this respect, the skilled person knew that no other method than C^{13} -NMR could be used for determining the presence or absence of 2-1 regioinversion. It was acknowledged that the limit of detection for 2-1 regioinversion depended on the signal to noise ratio. It was also referred to D17, a document showing that opponent 1 had been able to measure the absence of 2-1 regioinversion for an ethylene-propylene copolymer using C^{13} -NMR.

- (b) Furthermore the specification fully enabled the skilled person to reproduce the claimed polymer. The fact that the examples and comparative examples did not disclose the proportion of 2-1 regioinversions did not mean that the skilled person could not replicate the examples and measure the 2-1 regioinversions according to the disclosure of paragraph [52]. As indicated in declaration D35, the skilled person would recognize that, contrary to the statement in paragraph [0052] of the patent, the content of regioinversion could not be calculated on the basis of the relative concentration of $S_{\alpha\beta} + S_{\beta\beta}$ as $S_{\beta\beta}$ did not relate to 2-1 regioinversion. The skilled person would recognize it as an obvious mistake, immediately recognizing in view of D31 that $S_{\beta\beta}$ should read $S_{\beta\gamma}$.
- (c) Hence, the requirement of sufficiency of disclosure was fulfilled.

XVII. The respondents' arguments, as far as relevant for the present decision, can be summarized as follows:

- (a) The method to be used for determining the absence of 2-1 regioinversion was C^{13} -NMR and the limit of detection for signals corresponding to 2-1

regioinversion depended on the signal to noise ratio and the number of runs to be performed, as indicated in D36. This information was not specified in the patent. From the disclosure of the patent in suit a person skilled in the art having a propylene/ethylene copolymer meeting all other features of claim 1 and having a measured C^{13} -NMR spectrum could not ascertain whether he was working within the scope of the claims. Referring to declaration D36, it was argued that the correction of $S_{\alpha\beta} + S_{\beta\beta}$ into $S_{\alpha\beta} + S_{\beta\gamma}$ was not obvious as a possible correction was also $S_{\alpha\beta} + S_{\beta\gamma} + S_{\beta\beta}$.

- (b) Although the respondents could of course do a measurement according to their own beliefs and concepts as done by Opponent 1, such a measurement would not be a reproduction of the measurement as described in the patent.
- (c) Claim 9 referred to claim 1 for the definition of the copolymer, but did not give any details about how to produce the copolymer of claim 1. The specification provided vague information with respect to the catalytic system to be used. The skilled person was not provided with enough information to obtain the claimed copolymer, being obliged to determine the necessary measures by trial and error. It was for example shown by D28 that the skilled person would have understood that the absolute absence of 2.1 regioinversion did not exist.
- (d) Therefore, the requirement of sufficiency of disclosure was not met.

XVIII. The appellant requested that the decision under appeal be set aside and the patent be maintained as granted.

XIX. The respondents requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.
2. The issue to be decided in the present appeal proceedings is whether the reasons invoked by the opposition division for finding that the ground for opposition under Article 100(b) EPC prejudiced the maintenance of the patent in suit are correct. According to Article 100(b) EPC, an opposition may be filed on the ground that the European patent does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. As for assessing novelty and inventive step of the invention, assessment of sufficiency of disclosure of the invention, as defined in Article 83 EPC, is made for the invention for which protection is sought. This follows from the consideration that - in accordance with Rule 43(1) EPC - the invention in the European patent application is defined by the subject-matter of the claims, i.e. the specific combination of features present in the claims, as emphasised in Opinion G 2/98 of the Enlarged Board of Appeal (point 2 of the Reasons).
3. Accordingly, the requirements of sufficiency of disclosure are only met in the present case if the invention as defined by the terms of claims 1 to 10 can be performed by a person skilled in the art in the whole area claimed without undue burden, using common

general knowledge and having regard to further information given in the patent in suit.

4. The questions addressed in the decision and by the respondents are in essence which quantitative meaning should be attributed to the feature "*absence of 2-1 regioinversion*", whether this property could be measured accurately and whether a propylene/ethylene copolymer meeting all other features of claim 1 can be considered to fall within the scope of the claims or not, depending on whether or not the absence of 2-1 regioinversion can be determined. Similar questions were addressed with respect to the ethylene content, as that feature was considered by the respondents to be meaningless in the absence of details concerning the type of apparatus to be used for the determination of that content by IR spectroscopy, the conditions to be used and the preparation of suitable samples.

5. Due to the absence from claim 1 of any indication or feature relating to a method for determining the absence of 2-1 regioinversion or the ethylene content in the copolymer, the present claims should be read as to encompass any polypropylene/ethylene copolymer that meets the parametric definition of claim 1, in particular the absence of 2-1 regioinversion and an ethylene content in the range of 4.5-7% wt, using any method that can be considered to be standard in the art concerned. Hence, claim 1 of the patent in suit is not restricted by the definition of the methodology specified in paragraphs [52] and [34] of the patent in suit for determining 2-1 regioinversion and comonomer content, respectively. Consequently, it is immaterial to the present case whether paragraph [52] contains an error concerning the exact methodology to be used for determining 2-1 regioinversion, as long as that method

is not required to be used according to wording of the claims and - in general - methods for identifying and quantifying 2-1 regioinversion were known to the skilled person at the date of filing of the patent in suit.

6. Such a less restrictive reading of the claim may on the one hand result in a larger number of polypropylene/ethylene copolymers meeting the claimed values or processes for their preparation than when one specific determination method were used. Consequently there would be less difficulty in obtaining polypropylene/ethylene copolymers as defined by the claims, or identifying processes for their preparation i.e. in less stringent requirements for assessing sufficiency of disclosure of the claimed combination of features. In that case it may on the other hand require stronger arguments in favour of novelty and inventive step, in particular if the claimed values were held to distinguish the claimed subject-matter from the prior art and to be considered essential for providing a technical effect vis-à-vis the prior art.

7. It was not contested that the standard method for identifying and quantifying 2-1 regioinversion at the date of filing of the patent in suit was ^{13}C NMR spectroscopy (see in particular D31, page 135-138, as well as the paragraph bridging pages 7704 and 7705 of D37 in which several references dealing with assignment of peaks in ^{13}C NMR and belonging to the prior art are cited). Accordingly, the skilled person, based on the general knowledge relating to ^{13}C NMR spectroscopy and its use for characterizing propylene/ethylene copolymers, would be able to identify signals relating to 2-1 regioinversion. This is in line with the argument of respondent / opponent 2, who according to

page 4 of the letter of 31 July 2013 indicated that of course it would be possible to do a measurement according to own beliefs and concepts as done by respondent / opponent 1 and shown with D17 in order to demonstrate the absence of regioinversion in the copolymer obtained in example 5 of D15. It was not contested either that the skilled person would be able to quantify the amount of ethylene incorporated in the copolymer, for example by IR spectroscopy as indicated in paragraph [34] of the patent in suit.

8. Hence, the absence of a specific indication in claim 1 of the manner to determine the absence of 2-1 regioinversion and the content of ethylene cannot lead to the conclusion that the subject-matter as defined by the terms of the claims cannot be carried out. The reason for this conclusion is that standard methods exist to measure the content of ethylene and the amount of 2-1 inversion, and by which means it is possible to verify the absence thereof in the copolymer.

9. The argument that the choice of the exact methodologies used for determining the content of ethylene content and the amount of 2-1 regioinversion and therefore its absence (such as for example determination of the peaks to be taken into account, measurement conditions, number of runs, limit of detection, calibration, signal to noise ratio) have an influence on the measurement of the content of ethylene and that of the quantity of 2-1 regioinversion, meaning that a specific methodology applied on a specific sample might show the absence of 2-1 regioinversion and a content of ethylene within the claimed range, while a different methodology applied on the same sample might not, boils down to the argument that the boundaries of the claims defining the propylene/ethylene copolymers and the process for their

preparation are not clearly defined. This, however, is a matter of clarity of the claimed subject-matter, not sufficiency of disclosure, as it was not shown, let alone argued, that knowledge of the exact methods to determine the absence of 2-1 regioinversion and the content of ethylene in the range of 4.5 to 7% wt would be essential to meet the additional requirements defined in the claims. Such an objection under Article 84 EPC cannot be successful in the present case as it would not arise out of any amendment made in opposition or appeal proceedings.

10. Hence, the issues addressed in the contested decision and by the respondents in appeal proceedings are not appropriate to demonstrate insufficiency of disclosure. Nevertheless, neither the contested decision nor the written arguments on appeal address the question as to whether the skilled person would be able to perform the invention as defined by the terms of the claims, i.e. would be able to prepare propylene/ethylene copolymers meeting the combination of parameters defined by the terms of claims 1 to 8 or to carry out the process for their preparation as defined by the terms of claims 9 and 10, throughout the whole area(s) claimed, taking into account the information given in the patent in suit, using common general knowledge and routine experimentation. In particular, the contested decision did not take into account the arguments relating to sufficiency of disclosure submitted by opponent 2 with letter of 6 May 2011 in relation to the disclosure of D18 (see points 4.1 to 4.4). The decision does not contain any argument relating to the process conditions that are needed to obtain the combination of technical features defined in the claims, on the basis of which it could be concluded that said combination of features is sufficiently disclosed. The written submissions of

the parties on appeal also do not address those issues which are essential to assess whether the subject-matter as granted lacks sufficiency of disclosure as submitted by the opponents.

11. Under those circumstances, as the essential issues to be addressed in respect of sufficiency of disclosure, as well as the issues of novelty and inventive step have not been dealt with in the contested decision, the Board exercises its discretion under Article 111(1) EPC to remit the case to the first instance for further prosecution.

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 for further prosecution.

The Registrar:

The Chairman:



B. ter Heijden

M. C. Gordon

Decision electronically authenticated