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**Datasheet for the decision  
of 14 January 2020**

**Case Number:** T 1627/17 - 3.3.03

**Application Number:** 05853858.8

**Publication Number:** 1824669

**IPC:** C08F210/06, C08F210/16

**Language of the proceedings:** EN

**Title of invention:**

ARTICLES HAVING IMPROVED CLARITY, PREPARED FROM PROPYLENE-  
ETHYLENE COPOLYMERS

**Patent Proprietor:**

TOTAL RESEARCH & TECHNOLOGY FELUY

**Opponent:**

Borealis AG

**Relevant legal provisions:**

EPC Art. 100(b), 111(1)

**Keyword:**

Sufficiency of disclosure - main request (yes)  
Appeal decision - remittal to the department of first instance  
(yes)

**Decisions cited:**

G 0003/14, T 0466/05, T 0608/07, T 2403/11



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Case Number: T 1627/17 - 3.3.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.03**  
**of 14 January 2020**

**Appellant:** TOTAL RESEARCH & TECHNOLOGY FELUY  
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**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 30 May 2017  
revoking European patent No. 1824669 pursuant to  
Article 101(3) (b) EPC.**

**Composition of the Board:**

**Chairman** D. Semino  
**Members:** D. Marquis  
B. Müller

## Summary of Facts and Submissions

I. The appeal by the patent proprietor lies from the decision of the opposition division posted on 30 May 2017 revoking European patent No. 1 824 669.

II. Claims 1 and 8 of the patent as granted read as follows:

"1. An injection molded article comprising a metallocene catalysed isotactic propylene-ethylene random copolymer resin having an ethylene content of from about 0.5 to about 3 percent by total weight of copolymer, with a xylene solubles content of less than about 1.5 percent by total weight of copolymer, the injection molded article exhibiting less than about 20 percent haze, as determined by ASTM D1003, at a thickness of about 0.08 inch (2.03 mm) and wherein the resin has a melt flow rate of 10 to 60 g/10min, as determined by ASTM D-1238, Procedure B."

"8. An injection molded article comprising a metallocene catalysed isotactic propylene-ethylene random copolymer resin having an ethylene content of greater than about 3 percent by total weight of copolymer, with a xylene solubles content of less than about 4 percent by total weight of copolymer, the injection molded article exhibiting less than about 13 percent haze, as determined by ASTM D1003, at a thickness of about 0.08 inch (2.03 mm) and wherein the resin has a melt flow rate of 10 to 60 g/10min, as determined by ASTM D-1238, Procedure B."

III. A notice of opposition against the patent was filed in which revocation of the patent was requested.

IV. The contested decision was based on the claims as granted as main request, on the first auxiliary request filed with letter of 13 January 2015 and on the second to ninth auxiliary requests filed with letter of 6 January 2017.

V. In the contested decision, the opposition division *inter alia* held that:

- The main request met the requirements of Article 123(2) EPC but failed to meet those of sufficiency of disclosure, in particular because of a lack of guidance in the patent for the measurement of the ethylene content, a lack of guidance for the measurement of the xylene solubles and a lack of guidance for the preparation of an injection molded article according to claim 1 in the absence of a clarifying agent.

In particular:

- (a) The patent in suit did not disclose any method for the measurement of the ethylene content specified in independent claims 1 and 8. The technical report D7 showed that the ethylene content determined on an isotactic propylene-ethylene random copolymer sample depended on the method used for its determination. The variation of the ethylene content was such that the ethylene content could be inside or outside the claimed range depending on the method chosen. There was no way to deduce from the description and from the examples, which method of measuring the ethylene content was meant to be used in the patent in suit, in particular since the examples of the patent in suit were not reworkable. The choice of the method thus amounted to an undue

burden and constituted a lack of sufficient disclosure of the claims.

(b) There was also no method disclosed in the patent in suit for the determination of the content of xylene solubles. D2 and D12 showed that two methods were known in the art that did not necessarily lead to the same results, which amounted to an undue burden with regard to the determination of the xylene solubles content. The examples of the patent in suit did not provide sufficient guidance as these were not reworkable. That lack of guidance as to the method was compounded by the fact that the content of xylene solubles had not actually been measured in the examples of the patent in suit. Rather, the values disclosed in the examples were target ranges that the claimed resins had to fulfill.

(c) The assertion in paragraph 4 of the patent in suit that specific haze level of the claimed injection molded article could be obtained without clarifying agent was not credibly supported by evidence. In that respect as well, claims 1 and 8 of the main request lacked sufficiency of disclosure.

- The first to ninth auxiliary requests whose claims were also defined by the ethylene content and the content of xylene solubles also lacked sufficiency of disclosure for the same reasons.

VI. The patent proprietor (appellant) lodged an appeal against that decision and filed with the statement of grounds of appeal a main request (corresponding to the claims as granted) as well as 12 sets of claims as the

first to twelfth auxiliary requests.

VII. The following documents were *inter alia* cited from the opposition procedure:

D2: US 6,537,478 B1

D7: Technical Report "Ethylene content quantification by IR spectroscopy of propylene-co-ethylene copolymers" submitted by the opponent with letter of 5 January 2017

D12: ASTM D5492 (Revision 2010)

The following documents were further submitted on appeal:

D13: declaration of Ms Katty Den Dauw, dated 4 October 2017

D14: "Determination of the Composition of Ethylene-Propylene-Rubbers Using <sup>13</sup>C NMR Spectroscopy" by Di Martino, M. Kelchtermans, in J. Appl. Pol. Sci., 1995, 56, pages 1781-1787

D15: "Triad sequence determination of ethylene-propylene copolymers - application of quantitative <sup>13</sup>C NMR" by Singh, G., Kothari, A., Gupta V., in Polymer Testing, 28, 2009, pages 475-479

D16: ASTM 5492-98, Standard Test Method for Determination of Xylene Solubles in Propylene Plastics

D17: DIN EN ISO Plastics - Determination of matter extractable by organic solvents (conventional method) (ISO 6427:1998)

- VIII. The parties were summoned to oral proceedings. Issues to be discussed at the oral proceedings were then specified by the Board in a communication dated 2 October 2019.
- IX. With letter dated 13 December 2019 the respondent made further submissions concerning sufficiency of disclosure.
- X. With letter dated 20 December 2019 the appellant made further submissions concerning sufficiency of disclosure and submitted the auxiliary requests 13 to 25.
- XI. Oral proceedings were held on 14 January 2019 in the presence of both parties.
- XII. The appellant's arguments, insofar as relevant to the decision, may be summarised as follows:

Main request - Sufficiency of disclosure

- The absence in the patent in suit of any determination method relating to the ethylene content or the xylene solubles content was not a matter of sufficiency of disclosure but a matter of clarity which did not arise out of an amendment of the claims. Both parameters were conventional in the art and well known methods for their determination were available from D14 and D15. With respect to the variations of the ethylene content allegedly shown in D7, D13 established that the skilled person would have chosen known conditions that allowed consistent results. The definition of the ethylene content in the claims of the main request was thus not ambiguous. Furthermore, the



range of ethylene content defined in the claims was not narrow and the skilled person would find in the patent in suit as well as in the common general knowledge sufficient guidance for its determination. With regard to the xylene solubles content, the skilled person would have used the existing standard method ASTM D5492 such as disclosed in D16 to perform its determination.

- It was known in the art that the ethylene content of a propylene-ethylene random copolymer was not the only factor of importance to improve the clarity of an article. In particular, the use of a metallocene catalyst as well as the xylene solubles content had an influence on clarity. The patent in suit additionally taught that lowering the melt flow rate of the copolymer lead to improved clarity. There was therefore sufficient guidance to provide an article with the level of haze as defined in claims 1 and 8 of the main request.

XIII. The respondent's arguments, insofar as relevant to the decision, may be summarised as follows:

Main request - Sufficiency of disclosure

- The definitions of the ethylene content and of the xylene solubles content in claim 1 of the main request were ambiguous.
- In particular, the patent in suit did not provide any information on how to determine the ethylene content of metallocene catalysed isotactic propylene-ethylene random copolymer resins. At least two methods were described in the art that could be used to determine the ethylene content of

these copolymers at the filing date of the patent in suit. The experimental reports D7 and D14 as well as the test submitted by the respondent on pages 13 and 14 of the rejoinder showed that there were significant variations in ethylene content determined for one and the same sample within a given method or applying two methods.

- Also, the patent in suit did not give any guidance as to which of the two standards for the determination of the xylene solubles content described in D16 or D17 had to be used.
  
- Since the ethylene content and the xylene solubles content had to be within narrow ranges in order for the article to perform in terms of clarity, the ambiguous definitions of these parameters in the patent in suit constituted a lack of sufficient disclosure. In that respect, the examples of the patent in suit did not provide sufficient guidance as to how these narrow ranges could be reliably and consistently reproduced. Considering Samples 1-3 of example 1 and Samples 7 and 8 of example 2, it was unclear how a propylene copolymer having an ethylene content of more than 2 wt% while simultaneously having a xylene solubles content of less than 1.5 wt% could be obtained, especially in view of the statement of the appellant that the xylene solubles content would increase with the ethylene content.
  
- The patent in suit also lacked disclosure with respect to the haze level of the claimed article. In particular, while the patent in suit taught that the presence of a clarity-enhancing agent was needed to maintain a low level of haze, the

articles according to claims 1 and 8 did not require the presence of that agent in the claimed compositions.

- XIV. The appellant requested that the decision under appeal be set aside and that the case be remitted to the opposition division for further prosecution on the basis of the granted claims as main request or alternatively of any of the first to twelfth auxiliary requests filed with the statement of grounds of appeal or any of the auxiliary requests 13 to 25 filed with the letter of 20 December 2019.
- XV. The respondent requested that the appeal be dismissed. The respondent also requested to remit the case to the opposition division for further prosecution in case the Board arrived at the conclusion that the decision of the opposition division was to be set aside.

### **Reasons for the Decision**

Main request

1. Sufficiency of disclosure
  - 1.1 Lack of sufficiency of disclosure of independent claims 1 and 8 was addressed in the decision of the opposition division with regards to the ethylene content and the xylene solubles content, both characterizing the metallocene catalysed isotactic propylene-ethylene random copolymer resin, and the haze level, defining the injection molded article comprising that copolymer.
  - 1.2 In order to meet the requirements of sufficiency of disclosure, an invention has to be disclosed in a manner sufficiently clear and complete for it to be

carried out by the skilled person without undue burden on the basis of the information provided in the patent specification and, possibly, common general knowledge.

1.3 This means in particular in the present case that the skilled person must be able to prepare an injection molded article according to independent claims 1 and 8, that article being defined in that it comprises a metallocene catalysed isotactic propylene-ethylene random copolymer resin with an ethylene content, xylene solubles content and melt flow rate within specific numerical ranges and in that it exhibits a haze as defined in claims 1 and 8.

1.4 In the contested decision the opposition division held that the determination of the ethylene content and the xylene solubles content by way of measurements involved an undue burden since

- the patent in suit did not disclose which methods, measuring conditions and calculation methods had been used and
- it was established that several methods, measuring conditions and calculation methods were available in the art and that depending on the selection of these, values of ethylene content and xylene solubles content were obtained that did not consistently fall within the ambit of claims 1 or 8 (points 3.1 and 3.2 of the decision under appeal).

1.5 Both the contested decision and the arguments submitted by the respondent in appeal with respect to the determination of the ethylene content and the xylene solubles content of the metallocene catalysed isotactic propylene-ethylene random copolymer resin defined in claims 1 and 8 of the main request relate to the issue

of whether or not these two parameters are ambiguously defined because of an alleged lack of information regarding their methods of determination, i.e. if the skilled person is in a position to determine whether or not he is working within the scope of the claims. While the appellant did not dispute the fact that the patent in suit does not indicate a method for the measurement of the ethylene content and the content of xylene solubles, which are characteristics of the metallocene catalysed isotactic propylene ethylene random copolymer resins used to prepare the injection molded article of claims 1 and 8, they argued that that issue was not a matter of sufficiency of disclosure but a matter of clarity (statement of grounds of appeal point 4, page 7).

- 1.6 The question whether or not that issue effectively amounts to a lack of sufficiency or if it is an issue of clarity was the object of many decisions as indicated in the Case Law of the Boards of Appeal, 9th Edition, July 2019, II.C.5.5, 6.6.4, 6.6.8, 8.2. However, an ambiguity of a parameter in the claims is not enough in itself to deny sufficiency of disclosure and the question whether said ambiguity leads to insufficiency of disclosure is to be decided on a case-by-case basis (see e.g. reference to decisions T 2403/11 and T 608/07 on pages 362, 389 and 390 in the Case Law, supra). Rather, with respect to sufficiency of disclosure, the relevant question is whether the patent in suit provides sufficient information which enables the skilled person, when taking into account common general knowledge, to reproduce the invention (see e.g. reference to decision T 466/05 on page 388 in the Case Law, supra).

- 1.7 In the present case, the question to be answered for sufficiency is not whether one can establish with a high degree of accuracy all the parameters of the method of determination of the ethylene content or of the xylene solubles content of a metallocene catalysed isotactic propylene-ethylene random copolymer resin, but rather if the skilled person is able to prepare an injection molded article as claimed.
- 1.8 In that regard, the patent in suit provides information concerning the preparation of the metallocene catalysed isotactic propylene-ethylene random copolymer resin such as the choice of catalyst (paragraphs 9-44), the polymerization process (paragraph 46) and the amount of ethylene monomer involved in the polymerization process (paragraph 47) as well as a description of the injection moulding process leading to the claimed articles (paragraph 53 and the examples, in particular samples 1 and 4). In the absence of any evidence to the contrary, that information is deemed sufficient to allow a skilled person to prepare injection molded articles based on metallocene catalysed isotactic propylene-ethylene random copolymer resin.
- 1.9 As to the lack of disclosure of the precise conditions under which the polymerization process of the examples was performed, such as the polymerization temperature, the polymerization pressure, the feed rates of the monomers the reactant proportions, the residence time of the monomers in the reactor(s) and the amount of catalyst used (point 3.1.3.1 of the contested decision), it was not shown that the skilled person would not have been able to reduce them into practice on the basis of the common general knowledge available to him.

- 1.10 Under these circumstances, the Board finds that the skilled person would have been able to prepare an injection molded article as claimed on the basis of the information provided in the patent in suit.
- 1.11 With regard to the ethylene content and xylene solubles content, while it has been established on the basis of D7 and D14 for the ethylene content and D16 and D17 for the xylene solubles content that the definition of these parameters in claims 1 and 8 was ambiguous due to a lacking definition of the methods, measuring conditions and calculation methods used to determine them, it has not been shown how that lack of accuracy would prevent the skilled person from obtaining the claimed injection molded articles.
- 1.12 On the contrary, the measurements of the ethylene content reported in Table 2 on page 4 of D7 appear to show that the measurements of low level of ethylene contents according to claim 1 or claim 8 were in principle possible using both NMR and IR methods known to a skilled person since ethylene contents of as low as 2.0% (method 3) and as high as 5.4% (method 1) were obtained. D7 thus shows that several methods were available in the art to the skilled person that would have allowed a measurement of an ethylene content as defined in both claims 1 and 8.
- 1.13 With regard to the xylene solubles content, D16 and D17 disclose different standards available in the art for the determination of that parameter but these documents are not relevant to the question of sufficiency of disclosure since they do not establish that a skilled person, considering the teaching present in the patent in suit and with help of the common knowledge concerning the preparation of propylene-ethylene based

copolymers, would not be able to prepare the claimed injection molded articles.

- 1.14 It is concluded in view of these considerations that it was not shown that the alleged ambiguity of the definitions of the ethylene content and the xylene solubles content is so severe that it would prevent the skilled person from preparing an injection molded article according to operative claims 1 and 8, i.e. that it amounted to a lack of sufficiency of disclosure. Rather, that issue could at most be related to a matter of clarity pursuant to Article 84 EPC, which however cannot be addressed at the present stage of the proceedings since the parameters in question were already present in the granted claims (see G 3/14, OJ EPO 2015, A102: catchword).
- 1.15 An additional line of argumentation submitted by the respondent for the first time on appeal was based on an alleged lack of guidance in the patent in suit regarding the implementation of the narrow ranges defining the ethylene content and the xylene solubles content of the metallocene catalysed isotactic propylene-ethylene random copolymer resin comprised in the injection molded article according to claim 1 of the main request (point 2.4 of the reply to the statement of grounds of appeal and point 1.1 of the letter of 13 December 2019).
- 1.16 The respondent in particular argued that it was not credible that a metallocene catalysed isotactic propylene-ethylene random copolymer resin according to operative claim 1 could be obtained under the conditions mentioned in the patent in suit and that the skilled person would not know how to prepare such a copolymer over the whole scope of that claim, in



particular a copolymer having an ethylene content of 2% or more while simultaneously having a xylene solubles content of less than 1.5 %.

- 1.17 In that respect, an objection of insufficient disclosure presupposes that there are serious doubts, substantiated by verifiable facts and the burden of proof is in that situation primarily on the opponent, i.e. the respondent (Case Law, supra, II.C.9).
- 1.18 The objection of the respondent is based on the values of ethylene content and xylene solubles content of samples reported in Tables 1 and 2 (Examples 1 and 2) of the patent in suit. If it is correct that the samples in Table 1 do not show a copolymer having an ethylene content of more than 2% while simultaneously having a xylene solubles content of less than 1.5%, that however does not imply that such copolymers were not accessible to the skilled person on the basis of the information contained in the patent in suit, if needed complemented by common general knowledge.
- 1.19 Sample 8 of example 2 (Table 2) for instance describes a copolymer having an ethylene content of 2% and a xylene solubles content of 0.5-1%, i.e. of less than 1.5%. While it was acknowledged by the respondent that Sample 8 and even Sample 7 in Table 2 might have assisted the skilled person in how to implement a random propylene copolymer having an ethylene content of 2% or higher and a xylene solubles content of less than 1.5% (page 3 of the reply dated 13 December 2019), the respondent argued that since the catalyst used in the preparation of these samples was not disclosed in the patent in suit, the skilled person was not in the position to reproduce their preparations. That argument of the respondent however was not substantiated by

verifiable facts showing that the skilled person would not be in the position to select an appropriate catalyst on the basis of the information available to him in the patent in suit or in the common general knowledge. That argument of the respondent therefore fails to convince.

1.20 In the present case, although the description of the patent in suit is broad and allows for a large variety of modifications (e.g. regarding the choice of catalyst and the other polymerization conditions during the preparation of the metallocene catalysed isotactic propylene-ethylene random copolymer resin), there is no evidence on file that working according to the teaching of the patent in suit does not lead to the preparation of metallocene catalysed isotactic propylene-ethylene random copolymer resins as defined in operative claims 1 and 8. Therefore, the respondent's objection is not supported by verifiable facts which would raise serious doubts as to the preparation of metallocene catalysed isotactic propylene-ethylene random copolymer resins as defined in operative claims 1 and 8 to the extent that the burden of proof as to sufficiency of disclosure would lie with the appellant.

1.21 The Board concludes that the respondent's arguments do not allow the conclusion that the skilled person would not be in a position to prepare with a reasonable expectation of success injection molded articles according to operative claims 1 and 8 on the basis of the information of the patent in suit, in particular in examples 1 and 2 thereof, if needed, complemented by common general knowledge. In that respect, it is further credible that injection molded articles may be obtained from the teaching of the patent specification and/or on the basis of the skilled person's common

general knowledge.

- 1.22 With regard to the haze level, the opposition division held that in the absence of any evidence that an injection molded article according to claims 1 or 8 could be prepared from a composition that did not comprise a clarifying agent the patent in suit was not sufficiently disclosed.
- 1.23 It is correct that neither claim 1 nor claim 8 contains any limitation regarding the presence or absence of clarifying agents or even clarity-enhancing agents as defined in paragraph 54 of the patent in suit. That however is not relevant to the question of sufficiency of disclosure of claims 1 and 8 of the main request, since none the relevant parts of the description of the patent in suit addressing the clarity or the haze level of the claimed injection molded article implies that clarifying agents or clarity-enhancing agents are necessary to obtain the claimed haze levels (paragraphs 54 to 59).
- 1.24 It is in particular apparent from the sentence "One approach to obtaining such improvement in clarity has involved the use of so-called clarity-enhancing agents." in paragraph 3 of the introductory part of the patent in suit that the presence of a clarity-enhancing agent in propylene-based polymers is not necessary in order to impart clarity. That is in line with the passage on paragraph 4 cited in the contested decision, also repeated in paragraph 54, which mentions that improved clarity could be obtained with or without the use of clarifying agents (paragraph 4) or clarity-enhancing agents (paragraph 54). Indeed, the patent in suit teaches that the clarity performance also depends on other factors such as the type of catalyst used to

prepare the isotactic propylene-ethylene random copolymer resin (paragraph 52), its ethylene content, its xylene solubles content, its melt flow rate and the thickness of the produced injection molded article (paragraph 58).

1.25 In that regard, it is irrelevant whether a clarifying agent or clarity-enhancing agent is used or not during the preparation of the claimed injection molded articles as long as the article has the required level of haze as defined in the claims. With respect to the examples of the patent in suit, it is undisputed that a clarifying agent (Millad TM 3988) was used in all instances. Since all examples contain a clarifying agent, no conclusion can be reached on which results would be obtained if no clarifying agent were used and therefore on whether the presence of a clarifying agent was necessary to obtain the claimed level of haze. In that respect also, no other verifiable facts were provided by the respondent that would support the existence of serious doubts as to whether the claimed articles having the required level of haze could only be obtained in the presence of clarifying agents. Under these circumstances, it cannot be concluded that claims 1 and 8 lack sufficiency of disclosure with respect to the haze level defined in these claims.

1.26 The Board concludes from the above that the patent is sufficiently disclosed.

2. Remittal

2.1 Sufficiency of disclosure was the only ground of opposition discussed at the oral proceedings before the opposition division and it was the only ground of opposition upon which a decision was taken. All the

parties present to these appeal proceedings requested the remittal of the case to the opposition division for consideration of the further grounds of opposition that had been raised by the opponent in their notice of opposition (lack of novelty and lack of inventive step - Article 100(a) EPC).

2.2 Although the EPC does not guarantee the parties an absolute right to have all the issues in the case considered by two instances, it is well recognised that any party may be given the opportunity of two readings of the important elements of a case. The essential function of an appeal is to consider whether the decision issued by the first-instance department is correct. Hence, a case is normally to be referred back if essential questions regarding the patentability of the claimed subject-matter have not yet been examined and decided by the department of first instance (Article 111(1) EPC).

2.3 Moreover, the facts under point 2.1 including the common request of all parties are for the Board special reasons in the sense of Article 11 RPBA 2020 for which a remittal of the case to the opposition division for further prosecution is appropriate.

**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

D. Semino

Decision electronically authenticated