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Datasheet for the decision of 9 March 2017

Case Number: T 0868/13 - 3.3.03

Application Number: 05815558.1

Publication Number: 1828304

IPC: C08L23/14, C08L23/10

Language of the proceedings: EN

Title of invention:
POLYOLEFINIC COMPOSITIONS HAVING GOOD WHITENING RESISTANCE

Patent Proprietor:
Basell Poliolefine Italia S.r.l.

Opponent:
Borealis AG

Relevant legal provisions:
EPC Art. 83
RPBA Art. 13(1), 13(3)

Keyword:
Late-filed document - admitted (no)
Sufficiency of disclosure - Main and auxiliary requests - (no)

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Case Number: T 0868/13 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 9 March 2017

Appellant: (Patent Proprietor)	Basell Poliolefine Italia S.r.l. Via Soperga, 14/A 20127 Milano (IT)
Representative:	Giberti, Stefano Basell Poliolefine Italia S.r.l. Intellectual Property P.le G. Donegani 12 44100 Ferrara (IT)
Respondent: (Opponent)	Borealis AG IZD Tower Wagramerstrasse 17-19 1220 Wien (AT)
Representative:	Lux, Berthold Maiwald Patentanwalts GmbH Elisenhof Elisenstraße 3 80335 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 11 December 2012 revoking European patent No. 1828304 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	D. Semino
Members:	D. Marquis
	C. Brandt

Summary of Facts and Submissions

I. European Patent No. 1 828 304 was granted on the basis of 6 claims, claim 1 reading as follows:

"1. A polypropylene composition comprising (per cent by weight):
a) 50-77% of a crystalline propylene polymer having an amount of isotactic pentads (mmmm), measured by ^{13}C-MNR on the fraction insoluble in xylene at 25°C, higher than 97.5 molar % and a polydispersity index ranging from 4 to 10;
b) 13-28% of an elastomeric copolymer of ethylene and propylene, the copolymer having an amount of recurring units deriving from ethylene ranging from 30 to 70% and exhibiting a fraction insoluble in xylene at ambient temperature in amounts of less than 45 wt%, the polymer fraction soluble in xylene at ambient temperature having an intrinsic viscosity value ranging from 2 to 4 dl/g; and
c) 10-22% of polyethylene Homopolymer or ethylene-propylene copolymer having a comonomer content lower then 10 wt% and having an intrinsic viscosity value ranging from 1 to 3 dl/g;

in said composition component (b) plus component (c) being in amount of at least 25 wt%."

II. A notice of opposition was filed in which revocation of the patent in its entirety was requested.

III. During opposition proceedings, the following documents *inter alia* were cited:
D10: EP 0 714 923 A1

D12: Application of the calculation method to measure the Intrinsic Viscosity of a component in a complex mixture
D13: mix TREF plot of heterophasic PPr and homo-PE
D14: FTIR spectroscopy

IV. The decision of the opposition division to revoke the patent was announced at the oral proceedings on 12 September 2012. The decision was based on a main request filed on 15 July 2010 and on a first auxiliary request filed during the oral proceedings before the opposition division.

Claim 1 of the main request differed from claim 1 as granted in that the component c) was defined as (additions underlined):
"[...] c) 10-22% of crystalline or semicrystalline polyethylene Homopolymer or ethylene-propylene copolymer having an average comonomer content lower then 10 wt% and having an intrinsic viscosity value ranging from 1 to 3 dl/g;"

Claim 1 of the first auxiliary request differed from claim 1 as granted in that the component c) was defined as (additions underlined, deletions in strike-through):
"[...] c) 10-22% of crystalline or semicrystalline polyethylene Homopolymer ~~or ethylene-propylene copolymer having an average comonomer content lower then 10 wt%~~ and having an intrinsic viscosity value ranging from 1 to 3 dl/g;"

V. The decision of the opposition division, as far as relevant to the present decision, can be summarised as follows:

Claim 1 of the main request was not allowable under Article 123(3) EPC. The first auxiliary request satisfied the requirements of Articles 123(2), (3) und 84 EPC. As to sufficiency of disclosure, the calculation of the intrinsic viscosity of component (b), produced in the presence of (a) was a routine procedure for the person skilled in the art. However, the TREF separation method mentioned by the proprietor could not be used to recover and/or reconstitute component (c) in full, as required in claim 1 in order to calculate the intrinsic viscosity value of (c). The subject matter claimed in the first auxiliary request was therefore not sufficiently disclosed. Document D14 among others was not admitted into the proceedings.

VI. The proprietor (appellant) lodged an appeal against that decision. With the statement setting out the grounds of appeal, the appellant requested that the decision of the opposition division be set aside and that the case be remitted to the opposition division for further prosecution on the basis of the claims of the main request or on the basis of one of three auxiliary requests, all filed with the statement of grounds of appeal. The main request and the second auxiliary request corresponded to the main request and the first auxiliary request underlying the contested decision respectively. The first and third auxiliary requests corresponded to the main and the first auxiliary requests respectively, in which process claim 6 had been deleted.

VII. In its reply to the statement of grounds of appeal, the opponent (respondent) requested that the appeal be dismissed. Documents D13A and D13B relating to TREF curves of heterophasic propylene copolymers were

provided. Document D14, not admitted by the opposition division, was also cited in the submissions.

VIII. In a communication sent in preparation of oral proceedings, the Board summarised the points to be dealt with and provided a preliminary view on the disputed issues.

IX. With letter of 1 February 2017, the respondent provided further arguments relating to the sufficiency of disclosure of the claimed subject matter. A reference to document D16 (Journal of Molecular Liquids 112 (2004), pp. 161-169) was made and D12a (Experimental report dated 19 January 2017 from Mr Gahleitner) was provided.

X. With letter of 2 March 2017, the appellant provided arguments relating to the sufficiency of disclosure of claim 1 and filed the following documents:
D17: pages 384, 532 and 533, Vol. 6 of Encyclopedia of polymer science and engineering 1986 Edition
D18: Structural characterization of reactor blends of polypropylene and ethylene-propylene rubber, Márcia Pires, Raquel S. Mauler, Susana A. Liberman, Journal of applied polymer science 92 (4), 2155-2162 (2004)
D19: Analysis of Polyolefin Blends by CRYSTAF, Brüll R., Grumel V., Pasch H., Raubenheimer H.G., Sanderson R., Wahner U.M., Macromolecular Symposia 178, 81 - 91 (2002)

XI. Oral proceedings were held on 9 March 2017.

XII. The arguments provided by the appellant, as far as relevant to the present decision, can be summarised as follows:

Admittance of documents filed in appeal

There was no particular reason why D18 and D19 had been filed at such a late stage of the proceedings. However, D18 and D19 only showed that the use of the TREF method to separate the different fractions of the polyethylene compositions was commonly known in the art since the 1970's, which had as a consequence that intrinsic viscosity of the different fractions could be measured by standard methods. D18 and D19 should be admitted into the proceedings. The admittance of the documents filed by the respondent was not objected to.

Main and first to third auxiliary requests

Sufficiency of disclosure

The claimed composition was reworkable since it could be obtained by blending the three polymeric components (a), (b) and (c). The problem raised by the respondent was only relevant to the preparation of the claimed composition by sequential polymerisation. In that case, the examples of the patent in suit could always be reworked since obtaining the same properties was sufficient to ascertain that an adequate intrinsic viscosity of the polymer components (b) and (c) had been obtained retrospectively. When compositions other than those disclosed in the examples of the patent in suit had to be prepared, the intrinsic viscosity of the individual components, in particular that of polymer (c), could be determined by separation of the three components (a), (b) and (c) of the composition by Temperature Rising Elution Fractionation (TREF) commonly known to the person skilled in the art. The intrinsic viscosity of component (c) was derived from the determination of the intrinsic viscosities of the

fractions of (a)+(b) and (a)+(b)+(c) by carrying out a TREF separation on each of these samples and by making use of the additive rule of the intrinsic viscosities. The objection raised pertained to a lack of clarity and not to a lack of sufficiency of disclosure since the person skilled in the art was able to obtain the claimed composition containing (a), (b) and (c). Even if it was possible that depending on specific compositions or conditions, the fractions collected during TREF separation could not be totally pure and a small extent of contamination from the polymer could not be excluded, this did not constitute an insurmountable obstacle to the rework of the claimed subject matter. It introduced at most an error in the determination of the intrinsic viscosity which did not affect the validity of the separation technique. Since that error only affected the accuracy of the measurement, it related to the definition of the scope of the claims which was matter of lack of clarity rather than a lack of sufficiency of disclosure. The claimed subject matter was therefore sufficiently disclosed.

XIII. The arguments of the respondent, as far as relevant to the present decision, can be summarised as follows:

Admittance of documents filed in appeal

D18 and D19 were filed at a very late stage of the proceedings, just a few days before the oral proceedings before the Board. These documents had been known to the appellant since their publications in 2002 and 2004 and the issue concerning the use of the TREF method to determine the intrinsic viscosity of the claimed components in view of the sufficiency of disclosure of claim 1 had already been raised in the

reply to the notice of opposition in July 2010. D18 and D19 therefore could and should have been introduced into the proceedings at an earlier stage. In addition, these documents were scientific publications and did not represent the common general knowledge of the skilled person. D18 and D19 should not be admitted into the proceedings.

Main and first to third auxiliary requests

Sufficiency of disclosure

The determination of the intrinsic viscosity of the xylene soluble fraction of the elastomeric polymer (b) and that of the polymer (c) was of paramount importance to the claimed subject matter because the intrinsic viscosity of the xylene soluble fraction of the elastomeric copolymer (b) and that of the polymer (c) had to be in a specific range. There was no indication in the patent in suit of how the intrinsic viscosities of the polymers (b) and (c) were determined. The method referred to by the appellant based on the use of the TREF separation method on (a)+(b) and on (a)+(b)+(c) as well as the subsequent application of the additive rule of the intrinsic viscosities of the components (a), (b) and (c) was not part of the common general knowledge and was not applicable to the claimed compositions. Concerning the additive method, it had been acknowledged by the appellant itself that it was not applicable to the heterogeneous system for the determination of the intrinsic viscosity of the claimed polymer component (c), as noted in point 3.5.2 of the decision of the opposition division. Even if the additive method were found applicable to the present case, there was no specific guidance to that effect in the patent in suit nor was it known to the person

skilled in the art. As to the separation of the polymer component (c), neither the TREF method nor the necessary conditions to perform the measurement (cooling rate, heating rate or elution rate) were given in the patent in suit so that the person skilled in the art was at a loss to perform the measurement. Furthermore, D13/D13A/D13B showed that the TREF method was not applicable to the claimed compositions since it was not possible to fully separate polyethylene (c) from the other components with that method. As to the intrinsic viscosities, neither the calculation method for the intrinsic viscosity of the xylene soluble fraction of the elastomeric polymer (b) nor the separation by TREF technique and subsequent intrinsic viscosity measurement of the polyethylene (c) were suitable approaches to obtain access to the claimed intrinsic viscosities. A blending method to obtain the claimed composition was of no relevance, as it was not even mentioned in the patent in suit.

XIV. The appellant requested that the decision under appeal be set aside and that the case be remitted to the department of first instance for further prosecution on the basis of the main request, or alternatively, on the basis of any of the first to third auxiliary requests, all requests filed with the statement setting out the grounds of appeal.

XV. The respondent requested that the appeal be dismissed.

Reasons for the Decision

1. Admittance of documents filed in appeal

1.1 Documents D13A and D13B were filed by the respondent with the reply to the statement of grounds of appeal.

Document D14, not admitted by the opposition division, was also cited in that reply. D13A, D13B and D14 all pertain to the critical issue of sufficiency of disclosure central to the contested decision and their admittance was not contested by the appellant. In view of this, the Board does not see any reason to make use of its power under Article 12(4) RPBA not to admit the documents. D13A, D13B and D14 are therefore in the proceedings.

1.2 As to the further documents filed in appeal, according to Article 13(1) RPBA, any amendment to the parties case after it has filed its grounds of appeal or the reply thereto may be admitted and be considered at the Board's discretion. The discretion is to be exercised in view of, inter alia, the current state of the proceedings, the complexity of the new subject matter submitted, and the need for procedural economy. Article 13(3) RPBA additionally requires that amendments sought to be made after oral proceedings have been arranged are not to be admitted if they raised issues the Board or the other party cannot reasonably be expected to deal without adjournment of the oral proceedings.

1.3 With regard to document D12a, D16 and D17, their admittance was not contested by the opposing party. In view of this the Board finds it appropriate to exercise its discretion under Article 13 RPBA by admitting the documents into the proceedings.

1.4 The situation is different with regard to documents D18 and D19, whose admittance was contested by the respondent. In the present case, the appellant filed documents D18 and D19 seven days before the date of the oral proceedings before the Board in order to establish

that the TREF separation method of polyethylene compositions that was allegedly used to determine the intrinsic viscosity in the patent in suit was common general knowledge since the 1970's. That point had however already been raised by the respondent, then opponent, on the 10 August 2012, in point 4.3 of a letter indicating that it had not been established that a calculation method for the intrinsic viscosity of component (b) nor the TREF separation technique of component (c) had been shown to be part of the general knowledge. Under these circumstances, the course of the proceedings did not, as such, justify the filing of D18 and D19 five years after the point was raised and at such a late final stage of the opposition appeal proceedings. Also, since these documents were made available to the public in 2004 (D18) and 2002 (D19), the Board finds no reason why they could not have been submitted earlier by the appellant. If the appellant considered it decisive for its case to introduce D18 and D19 in order to establish how the intrinsic viscosity was determined in the patent in suit, it could and should have done so in the course of the proceedings before the opposition division or at least with its statement of grounds of appeal.

1.5 In addition, the issue that had been raised by the opponent with its notice of opposition (points 5.2 to 5.8) and that was essential to the decision of the opposition division (point 3.5.3) was not confined to the existence of the TREF separation as such, it concerned more extensively the absence of guidance as to how the person skilled in the art had determined the intrinsic viscosity of the component (c) of the claimed compositions obtained by sequential polymerisation. In that regard, the appellant argued in his statement of ground of appeal that in order to determine the

intrinsic viscosity of the component (c), it was sufficient to carry out the TREF separation twice, first on the intermediate mixture of components (a) and (b) and then again on the composition containing (a), b) and (c). It has however not been shown by the appellant nor even argued how D18 and D19 provided the guidance necessary to carry out that procedure. The submissions provided with D18 and D19 by the proprietor in his letter from 2 March 2017 even added more complexity to the issue of sufficiency of disclosure since it at once contended that the TREF separation had not been carried out twice, as argued earlier, but that it had been carried out only once on the composition comprising (a), (b) and (c). Also in view of a change of line of argumentation of the appellant, the respondent could not be reasonably expected to deal comprehensively with the newly filed submissions of the appellant based on D18 and D19 without adjournment of the oral proceedings or remittal of the case to the opposition division.

1.6 For these reasons, D18 and D19 (and the submissions based thereon) are not admitted into the appeal proceedings (Article 13(1) and Article 13(3) RPBA).

Main and first to third auxiliary requests

2. Sufficiency of disclosure

2.1 The patent in suit pertains to polypropylene compositions comprising a crystalline propylene polymer (a), an elastomeric copolymer of ethylene and propylene (b) and a polyethylene (c) (paragraph 12). In claim 1, the components (b) and (c) of the composition are further defined by their viscosities, in particular, the polymer fraction soluble in xylene at ambient

temperature of component (b) has an intrinsic viscosity value ranging from 2 to 4 dl/g and the polymer component (c) has an intrinsic viscosity value of from 1 to 3 dl/g.

2.2 The patent in suit discloses that these compositions were obtained by means of a sequential copolymerisation process (paragraph 24), said process comprising at least three sequential polymerisation stages with each subsequent polymerisation stage being conducted in the presence of the polymeric material formed in the immediately preceding polymerisation reaction, wherein the polymerisation stage of propylene to the crystalline polymer (a) is carried out in at least one stage, than a copolymerisation stage of mixtures of ethylene with propylene to the elastomeric polymer (b) and finally a polymerisation stage of ethylene to polyethylene (c) are carried out (paragraph 25).

2.3 Accordingly, the polymerisation disclosed in the examples of the patent in suit was carried out in a series of three reactors equipped with devices to transfer the product from one reactor to the one immediately next to it (paragraph 52). In that process, polymer (a) was prepared in the first reactor, while polymers (b) and (c) were prepared in the second and third reactor, respectively (paragraph 56).

2.4 A preparation process of the claimed composition by blending of the three polymer components (a), (b) and (c) obtained separately from one another is not disclosed in the patent in suit.

2.5 The polypropylene compositions of the patent in suit were therefore exclusively produced by means of a sequential copolymerisation process in the course of

which the polymer (b) was produced in a medium already containing the polymer (a) and the polymer (c) was subsequently produced in the medium containing the polymers (a) and (b). In order to prepare the claimed polypropylene compositions comprising polymer components (b) and (c) having intrinsic viscosities defined by numerical ranges, the person skilled in the art must have the means of determining the intrinsic viscosities of these polymers in the course of the preparation process. Only so can the person skilled in the art ascertain that the polymer (b) or (c) produced in the relevant polymerisation stage is according to the claim, or, if it is not the case, adapt the process in order to obtain the claimed composition.

2.6 Neither the claims nor the description of the patent in suit disclose how the person skilled in the art determined the intrinsic viscosities of the polymers (b) and (c) in the course of the preparation process. Paragraph 50 of the description discloses that the intrinsic viscosity was measured in tetrahydronaphthalene at 135°C. It concerns the conditions under which the measurement of the intrinsic viscosities were performed but it does not indicate how these were actually measured. Values of the intrinsic viscosities of the polymers (b) and (c) are reported in Table 2 of the examples of the patent in suit. As to the intrinsic viscosity of the polymer fraction of polymer (b) soluble in xylene at ambient temperature, the notes provided under Table 2 indicate that the value reported was measured on the polymer composition produced in the first and second reactor. No further detail is provided on how the reported value was derived from the measurement performed on the composition produced in the first and second reactor and no reference is made to the measurement of the

intrinsic viscosity of the polymer (c). The examples do not provide further insight on the determination of the intrinsic viscosities of the polymers (b) and (c). Even if a person skilled in the art were to rework the examples of the patent in suit on the basis of the process disclosed in paragraph 56, under the same conditions as those provided in Tables 1 and 2 and trust that the intrinsic viscosities were according to claim 1 as a result of the properties of the whole composition being identical to those reported in Table 4 (melt flow rate, flexural modulus and whitening resistance), that would only apply to the limited number of specific examples of the patent in suit. The person skilled in the art would not derive therefrom any meaningful guidance as to the determination of the intrinsic viscosities of both polymers (b) and (c) that would enable the invention to be performed over the whole range claimed.

2.7 The sparse guidance relating to the determination of the intrinsic viscosities of polymers (b) and (c) available from the patent in suit is not sufficient to enable a person skilled in the art to prepare the claimed polypropylene compositions.

2.8 In the statement of grounds of appeal, the appellant argued that the intrinsic viscosities of the polymer components (b) and (c) could be obtained by applying the TREF separation twice, first on the mixture of polymers (a) and (b) produced in a first stage and then on the composition comprising (a), (b) and (c). The values of the intrinsic viscosities relative to the polymers (b) and (c) would then be derived from the measurement of the intrinsic viscosity of the fractions obtained by applying the TREF separation on (a)+(b) and (a)+(b)+(c) since these were all related by an additive

rule. It was however later in appeal proceedings not disputed by the appellant that the additive rule did not apply to the claimed polypropylene composition comprising (a), (b) and (c) since the claimed compositions were heterogeneous and the additive rule was only applicable to homogeneous compositions, in accordance to the submissions it had made before the opposition division (see point 3.5.2, first paragraph, page 8 of the decision of the opposition division). Also, the appellant did not show how the TREF separation had to be carried out on the samples containing (a) and (b) and (a), (b) and (c) so that the intrinsic viscosities of the polymers (b) and (c) could be determined. Moreover, no evidence was provided by the appellant to show that the procedure was known in the art, nor that it was applicable to the claimed compositions. On the contrary, it was not even shown that it was applied to the examples in the patent. The argument of the appellant based on the application of the TREF separation twice in the course of the preparation of the claimed composition must therefore fail.

2.9 The appellant was therefore not able to show that the determination of the intrinsic viscosities relating to the polymers (b) and (c) in polypropylene compositions comprising the polymer components (a), (b) and (c) produced by sequential polymerisation was part of the common general knowledge of the person skilled in the art.

2.10 The Board concludes from the above that the patent in suit also in view of the common general knowledge does not provide sufficient guidance for a person skilled in the art to determine the intrinsic viscosities of the polymers (b) and (c) in the claimed polypropylene

compositions. This deficiency cannot be simply considered as a lack of clarity related to an inaccuracy in the determination method as no method is disclosed in the patent (point 2.6), nor has it been shown that it can be derived from the common general knowledge (points 2.8 and 2.9 above).

2.11 Claim 1 of the main request is therefore not sufficiently disclosed. Since claim 1 of the first auxiliary request is identical to that of the main request, the conclusions for the main request equally apply to the first auxiliary request.

2.12 Claim 1 of the second and third auxiliary requests differs from claim 1 of the main request in that the ethylene-propylene copolymer having an average comonomer content lower than 10 wt% has been deleted from the polymer components (c). That amendment of claim 1 limits the polymer components (c) to crystalline or semicrystalline polyethylene homopolymers. Claim 1 still requires that the intrinsic viscosity of the polymer component (c) is within the range of 1 to 3 dl/g. The limitation of the polymer component (c) does therefore not address the issue of lack of sufficiency of disclosure. It does not modify the reasoning or the conclusion of the Board in that respect. The appellant did also not provide any new argument specific to claim 1 of these auxiliary requests. The Board therefore concludes that the second and the third auxiliary requests are not sufficiently disclosed for the same reasons as detailed above.

Conclusion

3. As all requests on file lack sufficiency of disclosure, there is no need for the Board to decide on any other issue and the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed

The Registrar: The Chairman:

P. Martorana D. Semino

Decision electronically authenticated