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D E C I S I O N
of 19 December 2005

Case Number: W 0017/05 - 3.3.03

Application Number: PCT/EP 2004/050714

Publication Number: WO 2004/106399A2

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Title of invention:

Process for making a coupled block copolymer composition and the resulting composition

Applicant:

Kraton Polymers Research B.V.

Opponent:

-

Headword:

-

Relevant legal provisions:

PCT Art. 17(3) a

PCT R. 13.1, 13.2, 40.1, 40.2(c)

Keyword:

"Unity a priori (yes) "

Decisions cited:

W 0033/92, W 0011/99

Catchword:

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International Application No. PCT/EP 2004/050714

D E C I S I O N
of the Technical Board of Appeal 3.3.03
of 19 December 2005

Applicant: Kraton Polymers Research B.V.
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Decision under appeal: Protest according to Rule 40.2(c) of the Patent Cooperation Treaty made by the applicants against the invitation (payment of additional fees) of the European Patent Office (International Searching Authority) dated 15 September 2004.

Composition of the Board:

Chairman: R. Young
Members: C. Idez
B. Günzel

Summary of Facts and Submissions

I. International application PCT/EP 2004/050714 entitled "Process for making a coupled block copolymer composition and the resulting composition" comprising 8 claims was filed on 5 May 2004.

II. Independent Claims 1 and 8 of the application as filed read as follows:

"1. A process for making a coupled block copolymer composition, comprising the steps of:

- a. reacting a living lithium-terminated polymer having the formula P-Li, where P is a copolymer chain having at least one polymer block A composed of one or more mono alkenyl arenes having 8 to 18 carbon atoms and at least one polymer block B composed of one or more conjugated dienes having 4 to 12 carbon atoms, with an alkoxy silane coupling agent having the formula $R-Si-(OR')_3$, where R is selected from aryl radicals having from 6 to 12 carbon atoms, or linear alkyl and branched alkyl radicals having from 1 to 12 carbon atoms, and R' is selected from linear alkyl radicals having from 1 to 4 carbon atoms, and where the molar ratio of Si to Li is between 0.35 and 0.7, thereby forming a coupled block copolymer composition;
- b. optionally hydrogenating the coupled block copolymer composition;
- and c. recovering the resulting coupled block copolymer composition.

8. A block copolymer composition comprising:
- a. a tetra-branched block copolymer (IV) represented by the general formula $(P)_4X$;
 - b. a tri-branched block copolymer (III) represented by the general formula $(P)_3X$;
 - c. a di-branched block copolymer (II) represented by the general formula $(P)_2X$;
 - and d. a linear block copolymer (I) represented by the general formula P; where:
 - i) P represents a block copolymer having a number average molecular weight of 25,000 to 200,000 and having at least one polymer block A composed of one or more mono alkenyl arenes having 8 to 18 carbon atoms and at least one polymer block B composed of one or more conjugated dienes having 4 to 12 carbon atoms;
 - ii) X represents the residue of an alkoxy silane coupling agent having the formula $R-Si-(OR')_3$, where R is selected from aryl radicals having from 6 to 12 carbon atoms, or linear alkyl and branched alkyl radicals having from 1 to 12 carbon atoms, and R' is selected from linear alkyl radicals having from 1 to 4 carbon atoms;
 - and iii) the relative amounts of copolymers I, II, III and IV are 0 to 5 weight percent IV, 0 to 10 weight percent III, 65 to 95 weight percent II and 0 to 20 weight percent I, where the total of I, II, in and IV equals 100 weight percent."

Claims 2 to 7 were dependent claims.

- III. On 15 September 2004 the European Patent Office (EPO), acting as International Searching Authority (ISA), in compliance with Article 17(3)a) PCT and Rule 40.1 PCT, issued an "Invitation to pay Additional Fees"

(hereinafter "Invitation") stating that the application contravened the requirements of unity of invention according to Rule 13 PCT and inviting the Applicant to pay, within a time limit of 30 days, 1 additional search fee.

IV. The reasoning given for this finding was that the claims of the present application were considered "a priori" to contain a lack of unity between Claims 1 to 7 on the one hand, which related to a process for making a coupled block copolymer comprising (a) reacting a living lithium terminated polymer having the formula P-Li as described in Claim 1, with an alkoxy silane coupling agent having the formula R-Si-(OR')₃ as described in Claim 1; (b) optionally hydrogenating the coupled block copolymer composition; (c) recovering the resulting coupled block copolymer composition (invention 1), and Claim 8 on the other hand, which related to a multi-component, multi-branched block copolymer composition comprising the block copolymers (I), (II), (III) and (IV) as described in Claim 8 (invention 2), since independent Claim 8's general composition was not dependent on the previous process claims 1 to 7, and, hence, the invention 2 was not specifically and unambiguously directly obtained from a previously claimed specially adapted process. Furthermore, it was held in the "Invitation" that the claims of the present application contained several inventions in consideration that the "corresponding technical features" of a process for making a coupled block copolymer composition as described in Claim 1 were not novel and inventive in view of the disclosures of the documents US-A-5 420 203 (referred to below as D1), EP-A-1 233 028 (referred to below as D2), and

US-A-3 880 954 (referred to below as D3). It was hence held that, since the application's "corresponding technical features" or "special technical features" of the application's first subjective problem relating to providing a process for making a coupled block copolymer composition were not novel and inventive, the application did not contain special technical features within the meaning of Rule 13.2 PCT, that is to say technical features that defined a contribution over the prior art, and that the present application did not meet the requirements of Rule 13.1 PCT for lack of unity.

V. On 8 October 2004 the Applicant paid the additional search fee under protest pursuant to Rule 40.2(c).

VI. In its letter dated 8 October 2004 announcing the afore-mentioned payment the Applicant argued essentially as follows:

(i) It was clear from the title and the technical field of the present application, that the latter concerned a process for making a coupled block copolymer composition and the resulting composition, wherein the composition contained low levels of uncoupled polymer and having substantially linear character.

(ii) As set out in paragraph [004] of the description the technical problem underlying the present application was to provide coupled styrenic block copolymers at high coupling efficiency while avoiding diblock contamination and retaining substantially linear character.

(iii) This problem was solved by using a specific silane coupling agent at a specific amount, in a process as claimed in Claims 1 to 7.

(iv) This resulted in a coupled styrenic block copolymer composition comprising little or no tetra-branched block copolymer, little or no tri-branched block copolymer, little or no uncoupled block copolymer and significant amounts of di-branched block copolymer. Such compositions were novel.

(v) In view of the "a priori" lack of unity objection, it was evident that the Examiner had ignored the characterizing feature of Claim 1 concerning the specific molar ratio of the alkoxy silane coupling agent to Li of between 0.35 to 0.7.

(vi) This feature was not disclosed in documents D1, D2 or D3.

(vii) Thus, it was clear that the Examiner had arrived at the "a priori" lack of unity objection by disregarding this essential feature of the present application.

VII. On 28 June 2005 the EPO/ISA issued a "Notification regarding Review of Justification for Invitation to pay Additional Search Fees" (hereinafter "Review Notification"), in which the Applicant was invited to pay a protest fee within a time limit of one month.

In paragraph 1 of the "Review Notification", the Applicant was told that after review of the protest the additional search fee should not be reimbursed.

The position of the Review Panel can be summarized as follows:

(i) In the "Invitation" dated 15 September 2004, it had been considered that the application did not comply "a priori" and "a posteriori" with the requirements of unity of invention.

(ii) In its letter dated 8 October 2004, the Applicant had argued about the first invention only. It had failed to identify which features of the two inventions could be considered to be the same or indeed the corresponding special technical features in the sense of Rule 13.2 PCT, and it had failed to identify a single inventive concept in the sense of Rule 13.1 PCT.

(iii) Thus, the original search was correct in identifying non unity "a priori".

VIII. On 18 July 2005 the Applicant paid the protest fee requested in the "Review Notification". In its letter dated 15 July 2005 announcing the afore-mentioned payment and in its letter dated 19 July 2005, the Applicant submitted the following additional comments:

(i) The present application had two categories of claims. Claims 1 and dependent claims concerned a process, and Claim 8 concerned a product.

(ii) The product of Claim 8 might be made by the process of Claims 1 to 7. Claim 8 was, however, not limited to a product obtained according to said claims.

(iii) Both claims 1 and 8 were novel.

(iv) The common inventive concept was the use of a specific coupling agent in specific ratio leading to a specific block copolymer composition having a high content of di-branched block copolymer.

(v) Thus, the "a priori" lack of unity objection was improper.

IX. The Applicant requested the reimbursement of the additional search fees and of the protest fee which had been paid.

Reasons for the Decision

1. Admissibility of the protest

1.1 The Board firstly notes that the arguments concerning the "a priori" lack of unity objection explicitly presented by the Appellant in its letter dated 8 October 2004 are based on its submissions, that documents D1 to D3 did not disclose the characterizing feature of Claim 1, i.e. the use of an alkoxy silane as coupling agent in a molar ratio of Si to Li of 0.35 to 0.7. In the Board's view, these arguments must, in fact, be regarded as arguments dealing with the "a posteriori" objection of lack of unity inherently raised by the ISA in the "Invitation".

1.2 Nevertheless, the Board notes that the Appellant has submitted in its letter dated 8 October 2004 that the technical problem underlying the present application

was to provide coupled styrenic block copolymers at high coupling efficiency while avoiding diblock contamination and retaining substantially linear character, that this problem was solved by using a alkoxy silane coupling agent in a specific molar ratio to Li, and that this resulted in a coupled styrenic block copolymer composition comprising little or no tetra-branched block copolymer, little or no tri-branched block copolymer, little or no uncoupled block copolymer and significant amounts of di-branched block copolymer.

1.3 Thus, in the Board's view, an implicit argumentation can be discerned from these submissions according to which the composition according to Claim 8 might be obtained by the process of Claim 1, in other words that there was a link between the subject-matter of Claim 1 and that of Claim 8.

1.4 Consequently, although the reasoning in the protest is *prima facie* rather confusing, it is nevertheless considered sufficient for the purpose of admissibility of the protest.

1.5 Thus, the protest is admissible.

2. *Unity of invention*

2.1 The Board notes that the Review Panel has indicated in the "Review Notification" that the ISA had considered in the "Invitation" that the application did not comply "a priori" and "a posteriori" with the requirements of unity of invention (point 1 of the Review Notification).

- 2.2 The Board however notes that, in the "Review Notification", the Review Panel has stated that the original search was correct in identifying non unity "a priori" (point 2.3 of the Review Notification).
- 2.3 Under these circumstances, the Board can only come to the conclusion that the Review Panel maintained only the "a priori" objection of lack of unity in its "Review Notification".
- 2.4 In assessing the question of "a priori" unity or lack of unity of invention, the documents of the international application as originally filed are the only source of relevant information which can be taken into account. Thus, the question as to whether documents D1 to D3 might be novelty destroying documents for the subject-matter of Claim 1 of the present application is totally irrelevant for the question of "a priori" lack unity of invention.
- 2.5 In this context, the Board notes that the "a priori" lack of unity objection raised by the ISA was based on the finding that the composition according to Claim 8 was not dependent on the previous process claims 1 to 7, and, hence, that the composition according to Claim 8 was not specifically and unambiguously directly obtained from a previously claimed specially adapted process.
- 2.6 While Rule 13.1 PCT clearly states that the international application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept (requirement of unity of invention"), it does not require that the link

between the subject-matter of two independent claims must be expressly stated in their wording. All that is required is that there should be a single general inventive concept. In the Board's judgment, in determining whether or not this requirement is met, a formalistic approach should be avoided. This means that even if, as in the present case, the wording of the two independent Claims 1 and 8 might at first glance give the impression that they related to two different inventions, an objection should only be raised if this impression is also supported by the description (cf. also decision W 33/92 of 12 August 1992, not published in OJ EPO, Reasons point 3).

2.7 This is, however, not the case here. On the contrary, in view of the Examples 3, 4, 5, 7, 8, and 9 (cf. Tables 2 and 3 of the description) it is evident that the compositions of these examples are compositions according to Claim 8 which have been obtained by a process according to Claim 1. Thus, the compositions of Claim 8 are products of the process of Claim 1 and, "a priori", i.e. without considering the state of the art, the subject-matter of independent Claims 1 and 8 is linked by a single general inventive concept, namely to make available a coupled styrenic block copolymer composition comprising little or no tetra-branched block copolymer, little or no tri-branched block copolymer, little or no uncoupled block copolymer and significant amounts of di-branched block copolymers by using a specific alkoxy silane coupling agent in a specific amount.

2.8 This conclusion cannot be altered by the argument of the ISA that the composition of Claim 8 is not

specifically and unambiguously directly obtained from a previously claimed specifically adapted process. While it might be true that the process of Claim 1 might lead to compositions not falling under the scope of Claim 8, this is because, as stated in the decision W 11/99 (OJ EPO 2000, 186), a manufacturing process and its product may not be regarded as lacking unity simply by virtue of the fact that the manufacturing process is not restricted to the manufacture of the claimed product.

2.9 Therefore, the arguments put forward in the "Invitation" are not conclusive and cannot support the "a priori" objection of lack of unity of invention.

Order

For these reasons it is decided that:

The refund of the additional search fee and the protest fee is ordered.

The Registrar:

The Chairman:

C. Eickhoff

R. Young