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Datasheet for the decision of 27 November 2012

Case Number: T 0830/09 - 3.3.10

Application Number: 93103303.9

Publication Number: 559146

IPC: A61L 29/00, A61L 31/00

Language of the proceedings: EN

Title of invention:
Medical implement, polymer composition and optical material

Patentee:
NIPPON ZEON CO., LTD.

Opponent:
Ticona GmbH

Headword:
Medical Implement/NIPPON ZEON

Relevant legal provisions:
EPC Art. 56

Relevant legal provisions (EPC 1973):
-

Keyword:
"All requests: Inventive step (no): technical problem only solved in part-solution obvious from prior art"

Decisions cited:
T 0946/00

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0830/09 - 3.3.10

D E C I S I O N
of the Technical Board of Appeal 3.3.10
of 27 November 2012

Appellant II: (Patent Proprietor)
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Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted 9 February 2009 concerning maintenance of European patent No. 559146 in amended form.**

Composition of the Board:

Chairman: P. Gryczka
Members: C. Komenda
C. Schmidt

Summary of Facts and Submissions

I. The Appellants II (Patent Proprietor) and I (Opponent) lodged an appeal against the decision of the Opposition Division which maintained the patent in amended form.

II. Notice of Opposition had been filed by the Opponent requesting revocation of the patent in its entirety on the grounds of lack of novelty and lack of inventive step (Article 100(a) EPC) and that the invention was not disclosed in a manner sufficiently clear for a skilled person to be carried out (Article 100(b) EPC). Inter alia the following documents were cited:

(14) JA-A-32 73 0 43,
(14a) a translation of parts of document (14) and
(19) DE-A-27 31 445.

III. The Opposition Division found that the invention was disclosed in a manner sufficiently clear for a skilled person to be carried out, but that the subject-matter of the claims according to the then pending main request was not novel. The subject-matter of the claims according to the then pending auxiliary request 1 was found to be novel and to involve an inventive step.

IV. At the oral proceedings before the Board held on 27 November 2012 the Appellant II submitted a new main request, a first auxiliary request, auxiliary request 1A, and a second and third auxiliary request. The wording of independent claims 1, 12 and 14 of the main request was as follows:

"1. Medical implement which is formed essentially of a thermoplastic norbornene polymer wherein the thermoplastic norbornene polymer is a thermoplastic norbornene polymer containing a compounding ingredient incompatible therewith wherein the compounding ingredient is dispersed in the form of microdomains in the polymer wherein 0.8 to 0.05 % by weight of the compounding ingredient are added to 99.2 to 99.95 % by weight of the thermoplastic norbornene polymer for preparing the thermoplastic norbornene polymer containing the compounding ingredient, and wherein the compounding ingredient has a lowest glass transition temperature of 40 °C or less and is a rubber-like polymer selected from the group consisting of copolymers of an aromatic vinyl monomer with a conjugated diene type monomer and hydrogenation products thereof."

"12. A thermoplastic norbornene polymer composition comprising a thermoplastic norbornene polymer containing a compounding ingredient incompatible therewith, wherein the compounding ingredient is dispersed in the form of microdomains in the polymer wherein 0.8 to 0.05 % by weight of the compounding ingredient are added to 99.2 to 99.95 % by weight of the thermoplastic norbornene polymer for preparing the thermoplastic norbornene polymer containing the compounding ingredient, and wherein the compounding ingredient has a lowest glass transition temperature of 40 °C or less and is a rubber-like polymer selected from the group consisting of copolymers of an aromatic vinyl monomer with a conjugated diene type monomer and hydrogenation products thereof."

"14. An optical material comprising the polymer composition according to claim 12."

The wording of claims 1 and 12 of the first auxiliary request differs from that of claims 1 and 12 of the main request in that the amount of the compounding ingredient has been restricted to "0.5 to 0.05 % by weight" and the amount of the thermoplastic norbornene polymer has been restricted to "99.5 to 99.95 % by weight". The wording of claim 14 remained identical to that of the main request.

The wording of the claims of auxiliary request 1A was identical to that of the first auxiliary request, whereby in the list of rubber-like polymers the "hydrogenated products thereof" were deleted.

The wording of claims 1 and 12 of the second auxiliary request was based on the wording of claims 1 and 12 of the first auxiliary request and had additionally been restricted to the compounding ingredient being "a rubber-like polymer selected from the group of hydrogenation products of copolymers of an aromatic vinyl monomer with a conjugated diene type monomer". The wording of claim 14 was identical to that of claim 14 of the main request.

The wording of claims 1 and 12 of the third auxiliary request was based on the wording of claims 1 and 12 of the second auxiliary request. In addition thereto the microdomains have been restricted to those "of 0.3 µm or less in diameter" and, as specified at the end of the claims as at the end of the claims "wherein when the microdomains are in a form other than a sphere, the

longest diameter of the microdomain must be 0.3 µm or less." The wording of claim 14 was again identical to that of claim 14 of the main request.

V. The Appellant I withdrew the objection relating to the admissibility of the appeal under Article 107 EPC and did no longer object to the novelty of the claimed subject-matter. He objected to the wording of claim 12 of all requests as being unclear in the sense of Article 84 EPC and repeated the objection that the subject-matter of the claims was not disclosed in a manner sufficiently clear and complete for it to be carried out by a skilled person. Document (19) was regarded as representing the closest prior art for the subject-matter of claim 12 of all requests. As far as hydrogenation products of the rubber-like compounding ingredients were concerned none of the alleged improvements had been demonstrated. For the remaining compounding ingredients specified in the claims the problem to be solved starting from document (19) could be regarded as to improve the transparency of the norbornene polymer compositions, since none of the other allegedly improved properties had been determined for the prior art compositions. Since the skilled man knew from document (14) that norbornene polymer compositions with good transparency could be prepared when using the compounding ingredient in an amount of 0.5 % by weight or less he would have followed this teaching and would, thus, have arrived at the subject-matter of claim 12 of all requests without having to exercise any inventive skill.

VI. The Appellant II submitted that the patent in suit contained enough information to enable the skilled

person to carry out the invention. Concerning the question of inventive step he argued that starting from document (19) as closest state of the art the technical problem to be solved was to provide norbornene polymer compositions exhibiting improved transparency and adhesiveness while maintaining the good balance of other properties such as thermal stability during sterilization. Document (14) uses the compounding ingredient in a very low amount, but the monomers used in the preparation of the compounding ingredient were structurally very different from those of the patent in suit. Therefore, the skilled person would not have considered the teaching of document (14) for solving the technical problem and would have had no incentive from this document to use the compounding ingredient in an amount of 0.5% by weight or less in order to improve the transparency and adhesiveness of the compositions known from document (19). The argumentation of the Appellant I in this respect was regarded as being based on hindsight.

VII. The Appellant I requested that the decision under appeal be set aside and that the patent be revoked.

The Appellant II requested that the decision under appeal be set aside and that a patent be granted on the basis of his main request or, subsidiarily, on the basis of any of his auxiliary requests 1, 1A, 2 and 3, all requests submitted during the oral proceedings before the Board.

Reasons for the Decision

1. Admissibility of appeal (Article 107 EPC)

With its letter dated 2 November 2009 Appellant I raised an objection with regard to the admissibility of the appeal under Article 107 EPC. During the Oral proceedings before the Board he explicitly withdrew this request. Since the Board sees no problems under Article 107 EPC the appeal is regarded as being admissible.

2. *Articles 83, 84 and 123 EPC*

The Appellant I objected to the sufficiency of disclosure of the invention and to the amendments made to the claims of all requests, since the particular combination of features did not have a basis in the application as filed and since the amendments created a lack of clarity. In view of the negative conclusions with respect to inventive step (see paragraphs 5, 6 and 7 below), a decision of the Board on these disputed issues is not necessary.

3. *Novelty (Article 54 EPC)*

The Appellant I did not raise objections anymore with respect to novelty and the Board sees no reason to take a different view. Therefore, it is not necessary to give detailed reasons in this respect.

Third auxiliary request

4. *Inventive step (Article 56 EPC)*

4.1 Claim 12, the broadest independent claim of the third auxiliary request, relates to a thermoplastic norbornene polymer composition comprising a thermoplastic norbornene polymer and a minor amount of a rubber-like copolymer, which is the hydrogenation product of an aromatic vinyl monomer with a conjugated diene type monomer. A similar thermoplastic norbornene polymer composition is described in document (19), which was accepted by both parties as representing the closest state of the art.

4.2 Document (19) discloses a thermoplastic norbornene polymer composition comprising a norbornene copolymer and from 1 to 30 % by weight of an elastomer, which may be a styrene butadiene copolymer. The components of the composition are incompatible with each other, since the composition forms two separate phases, wherein the norbornene polymer forms the matrix and the elastomer being dispersed within the norbornene matrix. The dispersed elastomer has domain sizes of about 0,5 to 5 µm. The compositions show a high stability against oxidation at high temperatures (see claim 1; page 3, paragraph 1; page 6, lines 1 to 2, lines 8 to 11, lines 28 to 29).

4.3 Starting from this prior art document the technical problem to be solved according to the Appellant II was to provide thermoplastic norbornene polymer composition with improved transparency and improved adhesion while

maintaining the good thermal stability of the polymer composition.

4.4 As a solution to this technical problem the patent in suit proposes the composition according to claim 12 of the third auxiliary request, characterized in that the compounding ingredient is added in an amount of from 0.5 to 0.05 % by weight, the size of the microdomain forming the dispersed phase is 0.3 µm or less and as the rubber-like copolymer the hydrogenation product of a copolymer of an aromatic vinyl monomer with a conjugated diene type monomer having a glass transition temperature of 40°C or less is used.

4.5 The Appellant II filed no evidence which shows that by using the hydrogenation product of a rubber-like copolymer of an aromatic vinyl monomer with a conjugated diene type monomer an improvement of the transparency and of the adhesiveness is achieved.

4.6 As the purported improvement of the transparency and the adhesiveness of the claimed composition has not been shown, the technical problem defined by the Appellant II (see paragraph 4.3 *supra*) cannot be considered as having been successfully solved.

4.7 Consequently the objective problem underlying the patent in suit has to be reformulated in a less ambitious way as consisting merely in the provision of alternative thermoplastic norbornene polymer compositions.

4.8 The closest state of the art in document (19) refers to the elastomeric compounding ingredient as being *inter*

alia a butadiene styrene copolymer, which covers both, the unsaturated copolymer and the hydrogenation products thereof. Thus, in order to provide an alternative thermoplastic norbornene polymer composition the skilled person would have also considered to use the hydrogenation products of a butadiene styrene copolymer. Further, according to document (19) the size of the microdomains in the norbornene matrix should be within about 0.5 to 5 µm (page 6, second paragraph). Therefore a skilled person would not have been deterred from working outside these approximate limits and would, thus, also have considered to use a smaller microdomain size of 0.3 µm or less.

Finally, when looking for alternative transparent norbornene polymer compositions the skilled person would have also considered document (14), which refers to transparent norbornene polymer compositions comprising a minor amount of a rubber-like compounding ingredient, which is a random copolymer of ethylene and a cyclic olefin having a softening temperature of 70°C or less and also covers compositions having a glass transition temperaures of 40°C or less. The amount of the compounding ingredient in Example 2 is about 0.5 % by weight (see document (14a), table 1). Therefore, the skilled person would have considered to use lower amounts of 0.5% by weight or less in order to solve the technical problem indicated in paragraph 4.7 *supra*.

4.9 Therefore, the skilled person would have arrived at the subject-matter of claim 12 by combining the teachings of documents (19) and (14) without having to exercise any inventive activity.

Main request, first and second auxiliary requests

5. Inventive step (Article 56 EPC)

The subject-matter of claim 12 of the third auxiliary request is included in independent claim 12 of the main request, the first and the second auxiliary request, since they also encompass the technical feature that the rubber-like copolymer is the hydrogenation product of an aromatic vinyl monomer with a conjugated diene type monomer. Therefore, the considerations as brought forward with regard to the subject-matter of claim 12 of the third auxiliary request also apply to the subject-matter of claim 12 of the main request, the first and the second auxiliary request with the consequence, that these requests have to be rejected due to a lack of inventive step.

Auxiliary request 1A

6. *Inventive step (Article 56 EPC)*

6.1 The subject-matter of claim 12 of auxiliary request 1A relates to norbornene polymer compositions with a minor amount of a rubber-like copolymer of an aromatic vinyl monomer with a conjugated diene type monomer. The hydrogenation products thereof are no longer claimed.

6.2 Starting from the prior art as represented by document (19) the technical problem to be solved according to the Appellant II was to provide thermoplastic norbornene polymer composition with improved transparency and improved adhesion while maintaining

the good thermal stability of the polymer composition. This was accepted by both parties.

6.3 As a solution to this technical problem the patent in suit proposes the composition according to claim 12 of auxiliary request 1A, characterized in that the amount of the compounding ingredient is added in an amount of from 0.5 to 0.05 % by weight, and the rubber-like copolymer is a copolymer of an aromatic vinyl monomer with a conjugated diene type monomer having a lowest glass transition temperature of 40°C or less.

6.4 In order to demonstrate that the solution to the above mentioned technical problem is successful the Appellant II referred to the examples of the disputed patent. Comparative examples 4 and 5, which represented the closest state of the art, disclosed a norbornene polymer composition containing the rubber-like compounding ingredient in an amount of 8 parts by weight and 3 parts by weight, respectively, based on 100 parts of norbornene polymer. The composition of comparative example 5 had a light transmittance value of only 72 % and an adhesiveness of only 54 %. The composition according to comparative example 4 had a light transmittance value of at most 42 %, but a very good adhesiveness of 100 %. A composition representing the invention was prepared in example 6, which used the same components as the compositions of comparative examples 4 and 5, but contained the rubber-like compounding ingredient in an amount of only 0.2 parts by weight per 100 parts of norbornene polymer. This composition showed a light transmittance value of 90.1 %, which corresponded to a significantly improved transparency of the composition. The adhesiveness was

100 %, as also found for the composition of comparative example 4. None of the compositions representing the closest state of the art had been analysed concerning their thermal stability.

Thus, it can be concluded that the improvement of the transparency has been demonstrated. However, since the composition according to the prior art in comparative example 4 exhibits the same good level of adhesiveness the purported improvement of the adhesiveness was not demonstrated. Further, the thermal stability of the compositions representing the closest state of the art had not been determined and cannot, therefore, be taken into account for determining the technical problem. Consequently, insofar as an improvement of adhesiveness and the maintenance of the good thermal stability of the polymer compositions are concerned, the technical problem has not been successfully solved.

6.5 Therefore, when starting from document (19) the technical problem has to be reformulated as to provide norbornene polymer compositions having an improved transparency.

6.6 In order to provide compositions with improved transparency the skilled person would find a solution in document (14). This document discloses transparent norbornene polymer compositions comprising as a rubber-like compounding ingredient a minor amount of a random copolymer of ethylene and a cyclic olefin having a softening temperature of 70°C or less, thus, encompassing those having a glass transition temperature of 40°C or less. Example 2 of document (14) uses the compounding ingredient in an amount of 0.5

parts by weight per 100 parts of norbornene polymer, which corresponds to an amount of about 0.5 % by weight representing the upper limit of the amount of the compounding ingredient in claim 12 of the auxiliary request 1A. The resulting norbornene polymer composition exhibits good transparency and good adhesiveness (see document (14a), tables 1 and 2). Therefore, the skilled person would have had an incentive from the teaching of document (14) to use the rubber-like compounding ingredient in an amount of 0.5 % by weight or less in order to solve the technical problem as defined in paragraph 6.5 *supra* without having to exercise any inventive skill.

6.7 The Appellant II argued that the skilled person would not have deviated from the teaching of document (19), since he might have risked to deteriorate the balance of the good heat stability and the dimensional stability of the norbornene polymer compositions. Therefore, selecting an amount of the rubber-like compounding ingredient below the recommended level taught in document (19) could only be based on hindsight.

6.8 However, in order to render a solution obvious it is sufficient to establish that the skilled person would have followed the teaching of the prior art with a reasonable expectation of success (see decision T 946/00, not published in OJ EPO). In the present case, the Board cannot agree with the argument of Appellant II since the skilled person has a clear incentive from document (14) to use the rubber-like compounding ingredient in an amount of 0.5% by weight in order to provide a norbornene polymer composition

having a good transparency (see paragraph 7.6 supra). Nothing was submitted by the Appellant II from which the Board could reasonably conclude that the skilled person has been deterred from following the teaching of this document. Further, all of the arguments of Appellant II in support of inventive step which were based on the premise that the improvement of the adhesiveness while maintaining a good balance of the thermal and the dimensional stability of the norbornene polymer compositions vis-à-vis document (19) are redundant, since such an improvement or effect has not been shown (see paragraph 6.4 *supra*).

6.9 Therefore, the Board concludes that the subject-matter of claim 12 according to auxiliary request 1A does not involve an inventive step in the sense of Article 56 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar The Chairman

C. Rodríguez Rodríguez P. Gryczka