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D E C I S I O N
of 25 July 2000

Case Number: T 0484/99 - 3.3.3

Application Number: 92307527.9

Publication Number: 0529910

IPC: C08F 8/00

Language of the proceedings: EN

Title of invention:

Biodegradable hydrophilic crosslinked polymer, process for producing it, and uses thereof

Patentee:

NIPPON SHOKUBAI CO., LTD.

Opponent:

Stockhausen GmbH & Co.KG
IDEMITSU KOSAN Co. Ltd

Headword:

-

Relevant legal provisions:

EPC Art. 123(2) and (3), 84

Keyword:

"Amendments - added subject-matter (yes) - opposition proceedings"
"Claims - clarity (no)"

Decisions cited:

-

Catchword:

-



Case Number: T 0484/99 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 25 July 2000

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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 4 March 1999
revoking European patent No. 0 529 910 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: C. Gérardin

Members: R. Young
J. De Preter

Summary of Facts and Submissions

I. The mention of the grant of European patent No. 0 529 910, in respect of European patent application No. 92 307 527.9, filed on 18 August 1992 and claiming a JP priority of 23 August 1991 (JP 212335/91) was published on 13 March 1996 (Bulletin 1996/11). Claim 1 read as follows:

"A biodegradable hydrophilic crosslinked polymer; in which a bond having as a composition unit at least one group (II) represented by the chemical formula -CO-O- and/or group (III) represented by the chemical formula -CO-NH- cross-links main chains, said main chains being made of a water-soluble oligomer which contains an ingredient having a molecular weight of 5,000 or less in 50% or more by weight of the water-soluble oligomer and which has a functional group (I) represented by the general formula -COOM (herein, M denotes any one of a hydrogen atom, monovalent metal, divalent metal, trivalent metal, an ammonium group and organic amine group); said cross-linked polymer showing a viscosity of 1,000 cP or less at 20°C by a 20% by weight aqueous solution of said crosslinked polymer."

Claim 2, an independent claim, was directed to a builder formed from the hydrophilic crosslinked polymer according to Claim 1.

Claims 3 to 6 were further independent claims directed, respectively, to a detergent composition, a fiber-treating agent, an inorganic pigment dispersant and a water treatment agent containing the hydrophilic crosslinked polymer according to Claim 1.

Claim 7, an independent claim, was worded as follows:

"A process for producing a biodegradable hydrophilic crosslinked polymer, of which 20% by weight aqueous solution shows a viscosity of 1,000 cP or less at 20°C, comprising a step of combining a water-soluble oligomer by a crosslinking agent:

said water-soluble oligomer has an ingredient of 5,000 or less in molecular weight in 50% by weight or more and the functional group (I) represented by the general formula -COOM (herein, M denotes anyone of a hydrogen atom, monovalent metal, divalent metal, trivalent metal, an ammonium group and organic amine group); and

said crosslinking agent has either (not only) at least one of a group (II) represented by the chemical formula -CO-O- and a group (III) represented by the chemical formula -CO-NH- as a composition unit, or (but also) is capable of forming at least one of the above-described groups (II) and (III)."

Claims 8 to 13 were dependent claims, directed to elaborations of the process according to Claim 7.

II. Two Notices of Opposition were filed on 13 December 1996, by Opponent I on the grounds of insufficient disclosure, lack of novelty and lack of inventive step, and by Opponent II on the grounds of lack of novelty and lack of inventive step. In a response received on 20 May 1997, the Patentee filed amendments to Claims 1, 7 and 8 of the patent in suit. In a further submission, received on 16 April 1998, the Patentee filed additional Claims 14, 15, 16 and 17. Finally, on 9 December 1998, the Patentee filed further sets of

amended claims forming a main request and four auxiliary requests. In particular, the second auxiliary request was a set of Claims 1 to 13, of which Claim 1 read as follows:

"A biodegradable hydrophilic crosslinked polymer; in which a bond cross-links main chains;

said main chains being made of a water-soluble oligomer which contains an ingredient having a molecular weight of 5,000 or less in 50% or more by weight of the water-soluble oligomer and which has a functional group (I) represented by the general formula -COOM (herein M denotes any one of a hydrogen atom, monovalent metal, divalent metal, trivalent metal, an ammonium group and organic amine group);

said bond is formed by a reaction of said water-soluble oligomer with a cross-linking agent of at least one group (V) selected from polyglycidyl compounds, tartaric acid, citric acid and malic acid;

said cross-linked polymer showing a viscosity of 1,000 cP or less at 20°C in a 20% by weight aqueous solution of said crosslinked polymer."

Claim 2, a dependent claim, was directed to the biodegradable hydrophilic crosslinked polymer of Claim 1, wherein the cross-linking agent was selected from polyglycidyl compounds, tartaric acid and citric acid.

Claim 3, an independent claim, was directed to a builder formed from the hydrophilic crosslinked polymer according to Claim 1 or Claim 2.

Claims 4 to 7 were further independent claims directed, respectively, to a detergent composition, a fiber-treating agent, an inorganic pigment dispersant and a water treatment agent containing the hydrophilic crosslinked polymer according to Claim 1 or Claim 2.

Claim 8, an independent claim, was worded as follows:

"A process for producing a biodegradable hydrophilic crosslinked polymer, of which 20% by weight aqueous solution shows a viscosity of 1,000 cP or less at 20°C, comprising a step of combining a water-soluble oligomer by a cross-linking agent:

said water-soluble oligomer has an ingredient of 5,000 or less in molecular weight in 50% by weight or more and the functional group (I) represented by the general formula -COOM (herein, M denotes anyone of a hydrogen atom, monovalent metal, divalent metal, trivalent metal, an ammonium group and organic amine group); and

said crosslinking agent is at least one group (V) selected from polyglycidyl compounds, tartaric acid, citric acid and malic acid."

Claim 9, a dependent claim, was directed to the process of Claim 8, when the cross-linking agent was selected from polyglycidyl compounds, tartaric acid and citric acid.

Claims 10 to 13 were dependent claims, directed to elaborations of the process according to Claim 8.

III. By a decision taken at oral proceedings on 10 February

1999 and issued in writing on 4 March 1999, the Opposition Division revoked the patent. The decision was based on the sets of claims forming the main and four auxiliary requests filed on 9 December 1998, subject to the cancellation of Claims 14 to 17 of the main request which did not meet the requirements of Rule 57a EPC. A further request by the Patentee, made at the oral proceedings, to change the sequence of the requests had been refused *inter alia* under Rule 71a EPC.

According to the decision, the claims of all the requests under consideration contained embodiments not directly or implicitly derivable from the granted form of the patent. They thus included added subject-matter in contravention of Article 123(2) EPC.

IV. On 3 May 1999, a Notice of Appeal against the above decision was filed, the prescribed fee being paid on the same day.

In the Statement of Grounds of Appeal, filed on 6 July 1999, the Appellant (Patentee) argued in substance as follows:

(i) Procedure

At the oral proceedings before the Opposition Division, the representative of the Patentee had not been given opportunity to be heard, in the sense of Article 113(1) EPC, in the following respects:

(a) No opportunity had been given to submit further amendments at the beginning of the

oral proceedings, since these had not been acceptable in accordance with Rule 71a EPC, or to comment. Consequently there had been a substantial procedural violation.

- (b) No opportunity had been given to comment on the necessity of cancelling Claims 14 to 17 of the main request, which had been required in accordance with Rule 57a EPC, even though a communication issued by the Opposition Division on 10 July 1998 had indicated that there was no objection to these claims under Article 123(2) EPC.
- (c) Following the announcement of the decision to refuse the main request on the basis of objections which were also held to be valid for the first and third auxiliary requests, no opportunity had been afforded to comment on the latter requests. The wording of the decision under appeal did not reflect the oral proceedings in its suggestion that there had been further discussion of the first and third auxiliary requests (point 4 of the Reasons for the Decision). On the contrary, it was clear from the Minutes of the oral proceedings, that the discussion had been limited to the admissibility of the second auxiliary request. Nor had the discussion in any way related to the phrase "selected from polyglycidyl compounds etc".
- (d) No opportunity had been given to comment on the allowability of the fourth auxiliary request.

(ii) Content

In the second auxiliary request, it was clear that there was a basis for the cross-linking agent being selected from "polyglycidyl compounds, tartaric acid, citric acid and malic acid" on page 6, lines 29 to 45 of the patent in suit. The inclusion of this amendment was not, therefore, contrary to Article 123(2) EPC.

The Statement of Grounds of Appeal was accompanied by the following sets of claims:

1. a first set of Claims 1 to 13 headed "Main auxilliary [sic] request";
2. a set of Claims 1 to 11 headed "First auxilliary [sic] request"
3. a set of Claims 1 to 13 headed "Second auxiliary request"; and
4. a set of Claims 1 to 13 headed "Third auxiliary request".

The "Main auxilliary request" (main request) corresponded to the second auxiliary request in the oral proceedings before the Opposition Division (section II, above).

The "First auxilliary request" differed from the main request in that the selection of cross-linkers presented in Claims 2 and 9 of the main request had been incorporated in the independent Claims 1 and 8, respectively, with deletion of Claims 2 and 9 of the

main request, the phrase "at least one group (V)" in Claim 1 furthermore being suppressed, and the remaining claims renumbered consequent upon deletion of Claims 2 and 9.

The "Second auxiliary request" differed from the main request, firstly in that the definition of the "bond" in Claim 1 had been amplified to read "a bond having as a composition unit at least one group (II) represented by the chemical formula -CO-O-...", and secondly in that the phrase "at least one group (V)" introducing the definition of the cross-linking agents had been suppressed in both Claim 1 and Claim 8.

The "Third auxiliary request" differed from the Second auxiliary request in that the definition of the polyglycidyl compounds had been amplified, in Claims 1 and 8, to read, "wherein the polyglycidyl compounds are chosen from the group comprising ethylene glycol polyglycidyl ether, polyethylene glycol diglycidyl ether, glycerol polyglycidyl ether, diglycerol polyglycidyl ether, polyglycerol polyglycidyl ether, sorbitol polyglycidyl ether, pentaerythritol polyglycidyl ether, propylene glycol diglycidyl ether, polypropylene glycol diglycidyl ether, resorcinol diglycidyl ether, 1,6-hexanediol diglycidyl ether, adipinic acid diglycidyl ester, o-phthalmic acid diglycidyl ester, terephthalic acid diglycidyl ester and p-hydroxy-bennzoic [sic] acid glycidyl ether ether....". The corresponding definition in Claims 2 and 9 had been amplified to recite a more specific selection of the compounds mentioned in Claims 1 and 8, respectively, specifically (after correction of a spelling error in Claim 2), adipinic [sic] acid diglycidyl ester and terephthalic acid diglycidyl

ester.

V. Respondent RI (Opponent OI) disagreed, in a submission filed on 23 October 1999, with the arguments of the Appellant, and argued in essence as follows:

(i) Procedure

The Opposition Division had given the parties involved in the proceedings sufficient opportunity to comment on the requests made in writing as to their allowability.

(ii) Content;

Main request

- (a) The listings of the crosslinking agents in Claims 1, 2, 8 and 9 comprised added subject-matter in the sense of Article 123(2) EPC, since each listing corresponded to a selection having no support in the original description.
- (b) The omission, from Claims 1 and 8 at least, of the requirement for the presence of at least one group (II) represented by the chemical formula -CO-O- and/or group (III) represented by the chemical formula -CO-NH- offended against Article 123(3) EPC, since this limitation had been present in the claims of the patent in suit as granted.
- (c) The definition of the crosslinking compound (B) in Claim 10 was obscure in its back

reference to Claims 8 and 9 (Article 84 EPC).

First auxiliary request

The objections raised in relation to the Main request applied *mutatis mutandis* to the First auxiliary request.

Second auxiliary request

Objections (a) and (c) applied *mutatis mutandis*. Furthermore, (d) the phrase "at least one of" introduced in front of the listing of crosslinking compounds in Claim 8 was contrary to Article 123(3) EPC.

Third auxiliary request

Objections (a), (c) and (d) applied *mutatis mutandis*, a further infringement of Article 123(2) EPC being seen in the formulation "comprising" in relation to the listing.

VI. Respondent RII (Opponent OII) also disagreed, in a submission received on 11 November 1999, with the arguments of the Appellant, in essence as follows:

(i) Procedure

The sequence in which the various requests were dealt with during the oral proceedings was reviewed in detail, and the opinion expressed that, whilst there had been no right simply to "cancel" certain claims under Rule 57a EPC, this

had not been a ground of revocation, and there had been no violation of Article 113 EPC. Also the decision not to allow the Proprietor to file further auxiliary requests was within the Opposition Division's discretion pursuant to Rule 71a EPC, especially in view of the numerous amendments already offered before, and did not amount to a substantial procedural violation.

(ii) Content

Whilst objection was raised under Article 123(2) EPC against the wording of the main request and the first and second auxiliary requests, no such objection was raised against the third auxiliary request. Nevertheless, the third auxiliary request was considered open to objection under this Article in combination with Article 84 and/or 83 EPC to the extent that the crosslinking agent was citric or malic acid, since these acids had only one OH group and were consequently incapable of crosslinking the oligomer chains.

VII. In a communication issued on 17 March 2000 accompanying a summons to oral proceedings before the Board, the preliminary, provisional opinion was given, that it had not been possible to discern any objective irregularity which would amount to a substantial procedural violation.

VIII. In a further submission of the Appellant, received on 23 June 2000, certain of the allegations concerning a contravention of the provisions of Article 113 EPC were repeated, and expanded to include allegations of "highly unusual behaviour" by the Opposition Division

as well as incompleteness of the Minutes. On the substance of the case, it was argued that none of the amended definitions involved added subject-matter or extended the protection conferred by the claims, and it was furthermore asserted that citric acid and malic acid were suitable for cross-linking the main chains.

The submission was stated to be accompanied by a main claim set and auxiliary claim sets 1, 2 and 3.

The main and first auxiliary claim sets corresponded to the "Main auxiliary request" and "First auxiliary request", respectively, filed with the Statement of Grounds of Appeal (section IV, above).

Auxiliary claim set 2 differed from the "Second auxiliary request", filed with the Statement of Grounds of Appeal, in that the definition, in Claim 8, of the crosslinking agent had been amended to read, "said crosslinking agent has at least one of a group (II) represented by the chemical formula -CO-O- as a composition unit or is capable of forming at least one group (II) and is selected from polyglycidyl compounds, tartaric acid, citric acid and malic acid."

Auxiliary claim set 3 differed from the "Third auxiliary request" filed with the Statement of Grounds of Appeal, in the following respects:

- (i) in Claim 1, the wording "consisting of" was used instead of "comprising" in relation to the group from which the polyglycidyl compounds were chosen;
- (ii) in Claim 2, the crosslinking agent was stated to

be "selected from" rather than being "at least one of" the specified compounds; and

- (iii) in Claim 8, the introductory wording of the definition of the crosslinking agent, had been amended to read, "said crosslinking agent has at least one of a group (II) represented by the chemical formula -CO-O- as a composition unit or is capable of forming at least one group (II) and is selected from".

IX. Oral proceedings were held before the Board of Appeal on 25 July 2000.

At the oral proceedings, the representative of the Appellant indicated that only the sets of claims forming second and third auxiliary requests filed with the submission of 23 June 2000, i.e. auxiliary claim sets 2 and 3, would be further defended.

- (i) On the procedural point, the representative reiterated in particular:
 - (a) the refusal, at the oral proceedings before the Opposition Division, even to consider the proposed re-arrangement of the requests under Rule 71a EPC had been an unreasonable exercise of discretion and amounted to a procedural violation; and
 - (b) contrary to what appeared in the decision under appeal, there had been no discussion of the phrase "selected from polyglycidyl compounds, etc." upon which the decision to revoke the patent in suit had been based

(Reasons for the Decision, point 4a)).

Consequently, there had been a substantial procedural violation in respect of both these items.

The Respondents disagreed with this view, and reiterated in substance the observations they had already made in writing.

- (ii) On the substantive issues, the Appellant dealt with both the second and third auxiliary requests together, and argued substantially as follows:

Claim 1 in each case was identical with Claim 1 as granted, except that, of the two alternative groups II and III, group III had been cancelled, and the restricted choice of cross-linking agents had a basis in the list of compounds in the originally filed application on page 6 of the latter; in particular, the repeated use of the expression "and the like" was evidence that other similar compounds were envisaged.

Claim 2 contained a further restricted choice of cross-linkers.

Claim 8 contained the same restricted group of cross-linkers as Claim 1.

Claim 9 contained a further restricted choice of cross-linkers.

Claim 10 was dependent on Claim 8 and consequently it was not necessary to repeat the list of cross-linkers,

since these were already present in Claim 8.

Respondent I disagreed that the particular selections of cross-linkers presented in the Claims 1, 2, 8 and 9 were derivable from the examples, since in the latter they were associated with particular co-reactants, proportions and experimental conditions, rather than simply with the generality of oligomers as now claimed. Nor were the selections derivable from the passage of description of the patent in suit relied upon (page 6), since this presented a larger number of classes of cross-linkers as equivalent, with no indication that the small group now considered was in any way crucial or even preferred. Consequently, the listings of the cross-linkers themselves mounted to added subject-matter in the sense of Article 123(2) EPC.

Furthermore, although the phrase "at least one" used in Claim 9 in relation to the list of cross-linkers permitted a combination of, say, citric acid with tartaric acid, no such combination had been provided in the examples of the patent in suit, since these only used one cross-linker, and the relevant passage of description relied upon by the Appellant permitted only the mixture of compounds of "two or more kinds", but not of compounds of the same kind. Citric and tartaric acids belonged, however, to the same group as listed (page 6, line 46), and therefore were of the same "kind". Consequently, there was added subject-matter in the sense of Article 123(2) EPC in this respect.

Finally, whilst Claim 10, which was dependent on Claim 8, required that the cross-linker B had "at least two of the functional group (IV) capable of reacting with a functional group which the water-soluble

oligomer (A) has...", neither Claim 8 nor Claim 10 contained the requirement, present in Claim 8 as granted, that the group II (-CO-O-), which was in any case a necessary component of the cross-linked product, was formed "by a reaction of the functional group (IV) of the cross-linker with the functional group which the water-soluble oligomer has". Consequently, in the case of the cross-linker being, say, a polyglycidyl, which itself contained no group II and furthermore did not necessarily form a group II on reaction with a functional group of the oligomer, the possibility was opened up by Claim 10 of the necessary crosslinking group II being formed by some other means than the selected cross-linker. Thus Claim 10 was broader in scope than the corresponding claims as granted, and hence open to objection under Article 123(3) EPC.

Respondent II supported the objections of Respondent I and furthermore saw a contradiction between the selection, according to Claim 8 and Claim 9, of citric acid or malic acid as a cross-linker, and the requirement in Claim 1 and Claim 7 as granted that a group II (-CO-O-) must always be formed, since citric and malic acids had only one OH- group and were consequently incapable of forming such a group. There was thus an unclarity in the sense of Article 84 EPC.

- X. The Appellant requested that the decision under appeal be set aside, and the patent maintained on the basis of the second auxiliary request (main request), alternatively on the basis of the third auxiliary request (auxiliary request), both filed on 23 June 2000. It requested also the reimbursement of the appeal fee.

The Respondents requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.
2. *Procedural points*

Whilst the allegations of the Appellant concerning the conduct of the oral proceedings before the Opposition Division were not corroborated by either of the Respondents except in one particular: the "cancellation" of Claims 14 to 17 of the main request, pursuant to Rule 57a EPC, without the explicit consent of the Patentee, the only allegations pursued by the Appellant at the oral proceedings before the Board, as summarised by the Chairman at those proceedings, were:

- (i) that the refusal, under Rule 71a EPC, by the Opposition Division to consider or even look at amendments to the requests presented on the day of the oral proceedings before them amounted to an abuse of procedure; and
- (ii) that the matters discussed at the oral proceedings before the Opposition Division had not included the ground ultimately given in the decision under appeal for the refusal of the second and fourth auxiliary requests, namely that the phrase "selected from polyglycidyl compounds, etc." embraced combinations not explicitly or implicitly derivable from either the worked examples or the passage on page 6 relied upon (Reasons for the decision, point (4a)).

2.1 In connection with point (i), above, it is clear from the wording of Rule 71a(2) EPC, that submissions of the Proprietor presented after the final date need not be considered. In the present case, it is equally evident that a large number of attempts to amend the patent in suit had been permitted, and each attempt had involved a series of main and auxiliary claim sets, the structures of which were not related in a simple way to the claims of the patent in suit as granted, or even to each other. The Board sees nothing abnormal in the refusal, by the Opposition Division, to consider still further such requests presented on the day of the oral proceedings.

The argument of the Appellant, that these claims had been filed at the EPO on the previous day is beside the point, since it was admitted that these sets of claims had not reached the Opposition Division by the day of the oral proceedings.

The further argument of the Appellant, that no new requests, but merely a rearrangement of the previous requests had been sought, is not convincing to the Board, since each such rearrangement amounts to a new request, the relationship of which to the other requests needs to be considered in detail.

In summary, the Board sees no procedural violation in the behaviour of the Opposition Division under point (i), above.

2.2 With regard to point (ii), whilst it is true that the phrase "selected from polyglycidyl compounds, etc." appears in the decision under appeal, whereas the relevant part of the Minutes of the oral proceedings

refers to the expression, "at least one of the group (V)" (Minutes, point 3), nevertheless the two wordings form the beginning and middle of the same expression in Claim 1, viz. "a cross-linking agent of at least one group (V) selected from polyglycidyl compounds, tartaric acid, citric acid and malic acid."

Furthermore, the finding, that embodiments are embraced "which are not explicitly or implicitly derivable", is the same in both the decision and the Minutes, and in any case broad enough to cover both aspects of the passage in question. The difference, if any, appears to be one of emphasis. The Board is unable to perceive any objective irregularity which would amount to a substantial procedural violation justifying a reimbursement of the appeal fee.

- 2.3 Since, furthermore, the appeal is not allowable for other reasons, which appear later, the conditions for the question of reimbursement to arise are in any case not fulfilled (Rule 67 EPC).

3. *Substantive issues*

- 3.1 Second auxiliary request (main request); Article 123(2) EPC

Independent Claims 1 and 8 are characterised by the selection, as cross-linking agents for the oligomers, of "polyglycidyl compounds, tartaric acid, citric acid and malic acid". The oligomers are defined in these claims as being water-soluble oligomers containing an ingredient having a molecular weight of 5,000 or less in 50% or more by weight of the oligomer and which have a functional group (I) represented by -COOM (wherein M denotes any one of a hydrogen atom, monovalent metal,

divalent metal, trivalent metal, an ammonium group and organic amine group). Thus a specific class of cross-linkers is associated with a defined generality of oligomers.

According to the corresponding independent claims of the application as originally filed and of the patent in suit as granted (Claims 1 and 7), however, the crosslinker is either unspecified as to its chemical structure (Claim 1 as filed and as granted), or it is solely defined in terms of its having either at least one group II or III, or being capable of forming at least one such group (Claim 7 as filed and as granted). Consequently, the independent claims themselves provide no basis for the association of the present selection of cross-linkers with the original generality of the oligomers.

Of the dependent claims of the application as filed and patent in suit as granted, furthermore, only one recites a particular selection of crosslinking agents. This is Claim 11 of the application as filed and patent in suit as granted, in which the compound (B), i.e. the cross-linker, is stated to be selected from "a group consisting of polyglycidyl compounds, polyhydric alcohols and polyamine." This does not, however, correspond to the selection according to present Claims 1 and 8.

- 3.1.1 The argument of the Appellant, that a basis for the selection of cross-linking agents was to be found in the description of the patent in suit as granted, specifically on page 6 at lines 29 to 46, and in the examples, is not convincing, for the following reasons:

3.1.1.1 The opening words of the passage referred to are, "Practical examples of the compound (B) are, for example....". The passage then goes on to list a series of kinds of compounds, including "polyhydric alcohols, such as ethylene glycol, triethylene glycol, polyethylene glycol, glycerine,.... and the like" (lines 29 to 33); "lactone polymers having hydroxyl groups at both terminal ends such as poly- α -caprolactone.... and the like" (lines 33 to 34); "polyglycidyl compounds such as ethylene glycol diglycidyl ether, polyethylene glycol diglycidyl ether.....and the like" (lines 35 to 39); "polyamine such as ethylene diamine, diethylenetriamine.... phenylenediamine and the like" (lines 39 to 40); "polyaziridine, such as 2,2-bishydroxymethylbutanol-tris[3-(1-aziridinyl)propionate], 1,6-hexamethylenediethyleneureaand the like" (lines 41 to 42); "polyaldehyde such as glutaraldehyde ... and the like" (line 42); "polyisocyanate such as tolylene 2,4-diisocyanateand the like" (line 43); "compounds having both a carboxyl group and a hydroxyl group such as tartaric acid, citric acid, malic acid, lactic acid and the like" (lines 43 and 44); "imino acids such as 2,2'-iminodisuccinic acid....and the like" (lines 44 to 45); and "amino acids such as aspartic acid, α -alanine and the like" (lines 45 to 46).

Thus, no less than ten classes or kinds of cross-linkers are listed as being suitable. None of them is, however, distinguished as being more crucial, more valuable, or more preferred than the other. Much less is there any indication of a preference for the specific selection of cross-linkers now presented as essential.

This is not altered by the phrase, "The compounds are used alone or in combination of two or more kinds" (page 6, line 46), since it is evident that the relevant selection consists, on the one hand, of one class or kind of crosslinker (polyglycidyl compounds), and, on the other, of two individual members of another class or kind of crosslinker (compounds having both a carboxyl group and a hydroxyl group). It is not, therefore, restricted to a combination of two or more kinds.

3.1.1.2 Nor do the examples provide such a basis, since in each case a particular cross-linker is disclosed as being used in combination with a particular, specified oligomer, in particular quantities, and under particular experimental conditions. In other words there is no basis for the concept that the selected cross-linkers would be applicable to all the oligomers covered by the claims.

3.1.1.3 Indeed, the Board has been unable to trace any statement, nor did the representative of the Appellant point to any, in the patent in suit or the documents of the application as filed, which would lead the skilled reader to conclude that any one of the cross-linkers or kinds of crosslinkers listed on page 6 would be suitable for use with each and every one of the oligomers covered by the generality of the claims. On the contrary, the monofunctionality of citric and malic acid in respect of -OH groups pointed out by Respondent RII (section VI(ii)), above) would be expected to render such compounds useless for cross-linking -COOH groups. The argument of the Appellant, that citric acid and malic acid are in fact effective cross-linkers merely points to obscurities in the

essential features of the oligomers being used (section 3.3, etc., below). Thus the skilled person would conclude, if anything, that at least two of the listed cross-linkers were unsuitable for any of the oligomers claimed.

3.1.1.4 In summary, whilst the cross-linking agents presented in Claims 1 and 8 are to be found mentioned individually in the disclosure of the application as originally filed and the patent in suit as granted, there is no disclosure in these documents of the level of generality implied by the selection presented of cross-linking agents presented in Claims 1 and 8.

3.1.1.5 Such an amendment, which introduces a new level of generality, is sometimes called an "intermediate generalisation". If admitted, it takes effect from the relevant filing date of the patent in suit.

According to the established case law of the EPO, an inventive step over the state of the art may be recognised, subsequently, on the basis of an effect evidenced after the filing date.

If, however, an amendment introducing such a new level of generality or selection into the text of an application or patent were to be allowed under Article 123(2) EPC, then such an effect discovered after the filing date, to be associated with this new level of generality, could form the basis of a selection patent enjoying the original filing date, even though the effect on which it was based had been discovered only after the relevant filing date.

It is for this reason that such amendments are

considered to comprise added subject-matter and therefore to be inadmissible under Article 123(2) EPC. The present case appears to be no exception to the general principle.

3.1.1.6 Hence, these amended claims at least contravene the provisions of Article 123(2) EPC. Consequently, the main request is not allowable.

3.2 Third auxiliary request (auxiliary request);
Article 123(2) EPC

Whilst Claim 1 and Claim 8 of this request differ from the corresponding claims of the main request in that the reference to "diglycidyl compounds" has been replaced by a list corresponding to the list of "diglycidyl compounds such as" on page 6 at lines 35 to 39 (section 3.1.1.1, above), the selection still retains the references to tartaric acid, citric acid and malic acid. It therefore suffers from the same defect as that in the main request, and the claims are equally in contravention of the provisions of Article 123(2) EPC. Consequently, the auxiliary request is not allowable.

3.3 Although there is strictly no necessity, in view of the above findings in respect of the claims of both requests on file, to consider the further objections raised in relation to these claims by the Respondents, the Board nevertheless regards it as appropriate, for completeness, to address the question of whether Claims 8 and 10 (both requests) are in accordance with the provisions of Article 123(3) EPC and whether they are clear in the sense of Article 84 EPC.

3.3.1 The requirement, in Claim 8 of the patent in suit as granted, that the cross-linking agent (B), which has "at least two of the functional group (IV) capable of reacting with a functional group which the water-soluble oligomer (A) has", either has also at least one of the groups (II), or is capable of forming at least one of the groups (II) "by reaction of the functional group (IV) with the functional group which the water-soluble oligomer (A) has", has been replaced in the main request by "said crosslinking agent has at least one of a group (II) represented by the chemical formula -CO-O- as a compositional unit or is capable of forming at least one group (II) and is selected from ...".

Thus, whilst there is still a requirement for a group (II) having the formula -CO-O- to be formed, there is no longer any requirement for it to be formed by reaction of the functional group of the cross-linker with a functional group of the oligomer (A). It follows from the above, that when the cross-linker is a polyglycidyl compound **not** having a group (II) of formula -CO-O- (which applies to most of those specified in the patent in suit), then Claim 8 presumably requires the groups (II) to be formed by some agency other than the named cross-linker.

Hence, Claim 8 is to this extent broader in scope than Claim 8 as granted, and consequently in contravention of Article 123(3) EPC.

3.3.2 The dichotomy referred to above, is intensified in Claim 10, in which the option that the crosslinker is merely capable of forming at least one of the groups (II) has been dropped, and the claim is limited to the

case in which the crosslinker has, i.e. contains, at least one of the groups (II), since the claim, in its dependency on Claim 8, still requires that the crosslinker can be a diglycidyl compound.

Thus, Claim 10 contains a fundamental contradiction, in that whilst requiring a particular structure for the cross-linker, it defines a cross-linker compound not having this structure.

It is thus evident that Claim 10 does not meet the requirements of Article 84 EPC (clarity).

3.3.3 In summary, Claim 8 contravenes the provisions of Article 123(3) EPC, and Claim 10 fails to meet the requirements of clarity set of Article 84 EPC. These conclusions apply to the thus numbered claims of both the main and auxiliary requests.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

E. Görgmaier

C. Gérardin