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**Datasheet for the decision
of 15 July 2016**

Case Number: T 1743/12 - 3.3.03
Application Number: 04021552.7
Publication Number: 1516884
IPC: C08F20/06, C08F2/10, A61L15/60
Language of the proceedings: EN

Title of invention:

Water-absorbent resin having treated surface and process for producing the same

Patent Proprietor:

NIPPON SHOKUBAI CO., LTD.

Opponent:

Evonik Degussa GmbH

Headword:

Relevant legal provisions:

EPC Art. 54, 123(2)
RPBA Art. 12(2), 13(3)

Keyword:

Amendments - added subject-matter (yes) Main request, Auxiliary requests 1-7

Novelty - (yes) Auxiliary request 8

Decisions cited:

Catchword:



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Case Number: T 1743/12 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 15 July 2016

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 14 June 2012
revoking European patent No. 1516884 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman F. Rousseau
Members: M. C. Gordon
C. Brandt

Summary of Facts and Submissions

I. The appeal lies from the decision of the opposition division revoking European patent number EP-B1-1 516 884 (granted on European patent application number 04021552.7).

II. Claim 8 of the application as filed read as follows:

"8. A water absorbent resin having a treated surface, wherein a polyvalent metal atom and a ligand which can coordinate at the polyvalent metal atom and is other than water are present on a surface of a water-absorbent resin having an internal crosslinked structure and a crosslinked surface obtained by polymerizing a monomer containing acrylic acid and/or a salt thereof as a main component."

Claims 1 and 7 of the patent as granted read as follows:

"1. A process for producing a water-absorbent resin having a treated surface, which comprises:
a step of mixing a water-absorbent resin having an internal crosslinked structure obtained by polymerizing a monomer containing acrylic acid and/or a salt thereof as a main component, a complex containing a polyvalent metal atom as a central atom and an organic secondary crosslinking agent in the presence of an aqueous liquid; and
a step of crosslinking a surface of the water-absorbent resin with the organic secondary crosslinking agent wherein the complex is at least one selected from the group consisting of zirconium acetate, zirconium propionate, zirconium acetylacetonate complex, sodium zirconium hexafluoride, potassium zirconium

hexafluoride, ammonium zirconium carbonate, sodium zirconium carbonate, and potassium zirconium carbonate."

"7. A water-absorbent resin having a treated surface, wherein a trivalent or tetravalent metal atom and a ligand which can coordinate at the trivalent or tetravalent metal atom and is other than water are present on a surface of a water-absorbent resin having an internal crosslinked structure and a crosslinked surface obtained by a surface-crosslinking agent including a polyhydric alcohol compound, the water-absorbent resin obtained by polymerizing a monomer containing acrylic acid and/or a salt thereof as main component and having an absorption capacity without load (CRC) of 20 g/g or larger and a saline flow conductivity (SFC) of 100 to 2000.10⁻⁷ cm³.s/g."

III. A notice of opposition against the patent was filed in which revocation of the patent on the grounds of Art. 100(a) EPC (lack of novelty, lack of inventive step), Art. 100(b) EPC and Art. 100(c) EPC was requested.

Inter alia the document

D1: WO-A-00/53644

was relied upon by the opponent.

IV. The decision of the opposition division was based on the claims of the patent as granted as the main request and a set of claims submitted during the oral proceedings as the sole auxiliary request. During the course of the oral proceedings, following discussion of the main request, the auxiliary requests 1-10, submitted during the written procedure were withdrawn and consequently were not addressed in the reasons for the decision.

The auxiliary request consisted of 11 claims corresponding to claims 1-6 and 11-15 of the granted patent with consequential amendments to dependencies.

According to the decision, claim 7 of the main request met the requirements of Art. 123(2) EPC. The specified ranges for CRC and SFC were disclosed in the application as filed and there was no indication that there was any "parallel convergence" of these properties. Consequently all possible combinations of the favourable ranges for the two properties were disclosed with an equivalent degree of preference. The requirements of Art. 83 EPC were however not met for the subject-matter of that claim. The details of this latter conclusion are not relevant for the present decision.

Claim 1 of the auxiliary request was held to lack novelty over the disclosure of D1 because all features, in particular the nature of the complex were disclosed. According to D1 the preferred anion was acetate, meaning that only a single selection from the list of cations was required to arrive at zirconium. Accordingly the patent was revoked.

V. The patent proprietor lodged an appeal against the decision.

Together with the statement of grounds of appeal the patent proprietor - now the appellant submitted sets of claims forming a main request and 8 auxiliary requests.

The main request was stated to correspond to the claims submitted as auxiliary request 1 during the written opposition proceedings, and withdrawn during the oral proceedings before the opposition division.

Claim 7 of this request differed from claim 7 of the

patent as granted (see above point II) by specifying additionally at the end:

"wherein the surface-crosslinking is surface-crosslinking performed with an organic secondary crosslinking agent."

Auxiliary request 1 was stated to correspond to auxiliary request 7 as submitted and then withdrawn during the opposition proceedings.

Claim 7 of this request differed from claim 7 of the main request by specifying additionally that the resin had

- an absorption capacity under load (AAP) of 24g/g or larger under a load of 14.83 kPa and
- a moisture absorption blocking ratio (BR) of 40% or lower.

Auxiliary request 2 was stated to correspond to former (withdrawn) auxiliary request 8.

Claim 7 of this request differed from the main request in specifying that the resin had

- a CRC of 27 g/g or larger instead of a CRC of 20 g/g or larger
- an AAP of 24 g/g or larger
- BR of 40% or lower.

Auxiliary request 3 was newly filed and corresponded to auxiliary request 1 with the difference that in claim 7 the BR was specified as 30% or lower.

Auxiliary request 4 corresponded to auxiliary request 9 filed and withdrawn during the opposition proceedings. Claim 7 of this request corresponded to claim 7 of the main request wherein the feature "wherein the surface-crosslinking is surface-crosslinking performed with an

organic secondary crosslinking agent" had been replaced by "wherein the ligand is at least one kind selected from the group consisting of a ligand having an OH group, a ligand having a CO₃ group, an organic acid, and a chelate-coordinated compound."

Auxiliary request 5 was newly filed and corresponded to auxiliary request 4 with claim 7 specifying in addition the features AAP and BR as in auxiliary request 1.

Auxiliary request 6 (newly filed) corresponded to auxiliary request 4 with a restricted definition of the ligands in claim 7 to be selected from the group consisting of an organic acid, phosphoric acid and acetyl acetate.

Auxiliary request 7 (newly filed) corresponded to auxiliary request 5 with the additional restrictions of auxiliary request 6 in respect of the ligands in claim 7.

Auxiliary request 8 corresponded to the main request with the deletion of claims 1, 2 and 7-10 and consequential renumbering of the remaining claims.

Claim 1 of auxiliary request 8 read as follows:

"A process for producing a water-absorbent resin having a treated surface,

which comprises a step of mixing a water-absorbent resin having an internal crosslinked structure and a crosslinked surface obtained by polymerizing a monomer containing acrylic acid and/or a salt thereof as a main component, and a complex containing a polyvalent metal atom as a central atom in the presence of an aqueous liquid;

wherein the complex is at least one selected from the

group consisting of zirconium acetate, zirconium propionate, zirconium acetylacetonate complex, sodium zirconium hexafluoride, potassium zirconium hexafluoride, ammonium zirconium carbonate, sodium zirconium carbonate, and potassium zirconium carbonate."

Claims 2-4 were dependent process claims.

Claim 5 was directed to a water-absorbent resin and read as follows:

"A water-absorbent resin having a treated surface, wherein a polyvalent metal atom is present on the surface of a water-absorbent resin having an internal crosslinked structure and a crosslinked surface obtained by polymerizing a monomer containing acrylic acid and/or a salt thereof as a main component, wherein the extraction ratio of the polyvalent metal atom is 80% by mass or smaller, wherein the surface-crosslinking is surface-crosslinking performed with an organic secondary crosslinking agent."

Claims 6-8 were directed to preferred embodiments of the subject-matter of claim 5

- VI. The opponent - now the respondent - replied to the appeal. Arguments were advanced with respect to the non-allowability of all requests.
- VII. The board issued a summons to oral proceedings and on 4 February 2016 a communication setting out its preliminary view of the case.
- VIII. In a letter dated 17 May 2016 the respondent/opponent - for the first time - raised objections to the admissibility of the main request and auxiliary

requests 1, 2 and 4 to the proceedings.

- IX. In a letter dated 15 June 2016 the appellant/patent proprietor submitted a further set of claims as auxiliary request 9. Details of this request are not relevant for the present decision.
- X. Oral proceedings were held before the board on 15 July 2016.
The appellant/patent proprietor submitted an amended auxiliary request 1 which differed from auxiliary request 1 filed with the statement of grounds of appeal by defining the feature CRC as being "27 g/g or larger".
- XI. The arguments of the appellant/patent proprietor can be summarised as follows:
(a) Admissibility of main request, auxiliary requests 2 and 4
The withdrawal of the auxiliary requests 1-10 before the opposition division had been a reaction to the conclusion that claim 7 of the main request did not meet the requirement for sufficiency of disclosure and the indication that the same objections applied to the auxiliary requests. Maintaining the auxiliary requests would have served no purpose. The issues pertinent for the main request as considered by the opposition division applied to the present main and auxiliary requests 2 and 4. Hence it was not the case that reintroduction of these auxiliary requests meant that issues had to be discussed which would not have applied to the main request considered by the opposition division.
Furthermore the objection to the admissibility of these requests had been raised by the respondent/

opponent not in the rejoinder to the statement of grounds of appeal, but only after issue of the summons and therefore late in the sense of Art. 12(2) and 13(3) RPBA.

(b) Main request - Art. 123(2) EPC

The values of the minimum CRC were given in increasing order of preference. The application also stated that for diapers a minimum CRC value of 20 g/g was necessary, meaning that this amount would be seen as implicit to the term "water absorbent resin", in the context of the application and patent.

The definition of the most favourable range for the SFC was not arbitrary but emerged directly from the description and claims of the application as filed. Although there was a broad approximate correlation between the parameters CFC and SFC, these were largely independent of each other since they were subject to different influences, i.e. internal crosslinking (CRC) or surface crosslinking (SFC).

(c) Auxiliary request 1 (filed at the oral proceedings)
- Art. 123(2) EPC

Newly filed auxiliary request 1 had the same amendment as in the auxiliary request 1 considered by the opposition division to meet the requirements of Art. 123(2) EPC and was restricted to the most preferred values for CRC and SFC as disclosed in the application. With reference to T 1511/07 it had to be considered that the application contained a pointer to such combination. Further indirect evidence was provided by example 1, and to a lesser extent examples 3 and 4 of the application. This evidence was indirect because, it was conceded, the specific metal and ligand of example 1 were not

defined in the claim.

(d) Auxiliary requests 2-7 - Art. 123(2) EPC

The same considerations as for the main request and auxiliary request 1 applied.

(e) Auxiliary request 8 - Art. 54 EPC

Starting from D1 a selection from two lists was needed in order to arrive at the metal complexes as claimed meaning novelty was given.

XII. The arguments of the respondent can be summarised as follows:

(a) Admissibility of the main request and auxiliary requests 2 and 4

These requests had been unconditionally withdrawn during the opposition oral proceedings, so preventing the opposition division from taking a decision thereupon. Consequently the appellant had not suffered any adverse effect in respect of these and was not entitled to resubmit the requests on appeal.

(b) Admissibility of auxiliary request 1 submitted during the oral proceedings was not objected to.

(c) Main request - Art 123(2) EPC

The combination of CRC and SFC values in claim 7 was not disclosed in or derivable from the application as originally filed. Rather the subject-matter claimed represented an arbitrary combination of features. Reference was made to the findings of T 1511/07.

The nature of the metal complex was not defined in the claim whereas it was disclosed in the application as filed, in particular the examples, that the defined values of CRC and SFC were

dependent on the choice of metal complex, with emphasis on zirconium.

(d) Auxiliary requests 1-7 - 123(2) EPC

The considerations applied as for the main request

(e) Auxiliary request 8

Art 123(2) EPC

It was stated that no objections in this respect were raised.

Art 83 EPC

At the oral proceedings before the board it was argued that the moisture extraction ratio defined in claim 5 was only shown to be obtained with Zr complexes. The claim was however broader.

Art. 54 EPC

Claim 1 lacked novelty in respect of D1. Reference was made to the decision of the opposition division and the reasons set out therein. It was stated that an objection of lack of novelty was not raised in respect of claim 5.

XIII. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request submitted with the statement of grounds of appeal or on the basis of the new first auxiliary request as filed during the oral proceedings on 15 July 2016, or on the basis of any of the second to eighth auxiliary requests, all requests submitted with the statement of grounds of appeal, or alternatively on the basis of the ninth auxiliary request as filed with letter dated 15 June 2016.

XIV. The respondent requested that the appeal be dismissed. In the case that the Board comes to the conclusion that in particular claim 1 of the eighth auxiliary request

meets the requirements according to Article 54 EPC it is requested that the case be remitted to the opposition division for further prosecution.

Reasons for the Decision

1. The appeal is admissible
2. Admissibility to the procedure of the main request and auxiliary requests 2 and 4.

The withdrawal during the oral proceedings before the opposition division of the auxiliary requests that corresponded to the present main request and auxiliary requests 2 and 4 was stated to have followed the indication by the opposition division that those requests would fail for the same reasons as the then pending main request. This was not disputed by the respondent. Accordingly, the withdrawal of those auxiliary requests before the opposition division cannot be seen to amount to a tactical abuse by the patent proprietor with the aim of preventing the opposition division from taking a decision on the disputed issue. On the contrary the reasons for rejecting those auxiliary requests would have been identical to those given in respect of the then pending main request.

Furthermore, the respondent did not challenge - even implicitly - the admissibility of those requests in its rejoinder to the statement of grounds of appeal but took substantive position on them. It was only in the letter of 17 May 2016, i.e. more than four months after

receipt of the summons to oral proceedings, that objections to the admissibility of certain requests was made. No explanation or justification for the raising of the objection at this stage of the proceedings, for example in the light of submissions made in the further course of the appeal proceedings, was given. However, the raising of an objection to the admissibility of the main request and auxiliary requests 2 and 4 constitutes a change of case compared to that put forward in the reply to the statement of grounds of appeal (Art. 12(2) RPBA), so that admissibility of this new request is also a matter for the discretion of the board (Art. 13(1) RPBA).

Under these circumstances, the Board decides, in exercise of the discretion conferred to it by Articles 13(1) and 12(4) RPBA to reject the request for not admitting the main request and auxiliary requests 2 and 4 to the procedure and to take those requests into account.

3. Main request - Art. 123(2) EPC

The wording of claim 7 is based on the wording of claim 8 as filed wherein additional features have been inserted. The feature of a trivalent or tetravalent metal atom is disclosed in claim 15 of the application, which claim is dependent on claim 8.

The feature "surface crosslinking agent" is disclosed in claim 13, which is also dependent on claim 8. The feature that the surface-crosslinking agent includes a polyhydric alcohol is disclosed at page 13 line 6 of the application as originally filed. The nature of the monomer is disclosed in original claim 12. The feature that the CRC is 20 g/g or larger is disclosed at page 34 line 15. The feature of SFC being in the range 100 to $2000 \cdot 10^{-7} \text{cm}^3 \cdot \text{s/g}$ is disclosed at page 35 lines 3-4.

The question to be addressed is whether there is a basis in the application as originally filed for the specified values of CRC and SFC in combination.

A SFC ranging from 30 to 2000 $10^{-7}\text{cm}^3.\text{s/g}$ is disclosed in dependent claim 17 and on page 35, lines 1-2 expressing a preferred property of the water-absorbent resin. A CRC of 20 g/g or larger is also disclosed at page 35 lines 3-4 as a favourable property. For CRC and SFC the application as filed presents different possible ranges of values.

For the CRC these are:

"favourably" 20 g/g or larger

"more favourably" 22 g/g or larger

"still more favourably" 24 g/g or larger

"yet still more favourably" 25 g/g or larger

"particularly favourably" 27 g/g or larger.

For SFC these are:

"favourably" 30 to 2000 $\times 10^{-7}.\text{cm}^2.\text{s/g}$

"more favourably" 50 to 2000 $\times 10^{-7}.\text{cm}^2.\text{s/g}$

"still more favourably" 80 to 2000 $\times 10^{-7}.\text{cm}^2.\text{s/g}$

"particularly favourably" 100 to 2000 $\times 10^{-7}.\text{cm}^2.\text{s/g}$.

Apart from specific couples of CRC and SFC values disclosed in the examples the application as filed does not disclose further explicit combination of those properties or values, i.e. a fortiori combination of ranges. There is no indication in the application as filed that these parameters or the various ranges disclosed are in any manner directly linked or interdependent. Submissions of the appellant during the oral proceedings before the board also did not provide any basis for any direct link between these properties. This is consistent with the values reported in the examples which likewise do not reveal any

interdependence between the values of the two parameters.

Furthermore the argument of the appellant that the level of 20g/g as the minimum value of CRC would be seen as inherent or implicit to the application as originally filed in view of the indication that at lower values of CRC the absorption efficiency is deteriorated when used for sanitary materials such as diapers (page 34 lines 18-20 of the application) cannot convince. Neither the application as originally filed, nor operative claim 7 are restricted - even implicitly - to materials for diapers or, insofar as diapers are concerned, to a certain minimum level of performance of diapers. Accordingly there is no basis or justification for interpreting claim 7 as being subject to a restriction which would predicate a certain minimum value of CRC. Furthermore the value of 20 g/g is disclosed in the application as originally filed as being "favourably". This wording indicates that other values (i.e. lower than 20 g/g) are possible and that the value of 20 g/g, far from being some kind of mandatory or default minimum itself represents a degree of selection or restriction over a more general range.

Consequently the various ranges of the both the parameters CRC and SFC given in the application as filed have to be seen as two independent lists with none of the elements of either list being seen as some kind of default or mandatory minimum.

Furthermore the application does not disclose any relationship or link between elements of each list in terms of their degree of preference, i.e. there is, in the terminology of T 1511/07 (cited by both parties) no "pointer" to any particular combination of elements

from each of the two lists. In other words as these parameters have not been indicated in the application as filed to be directly linked it cannot be concluded that a range of CRC corresponding to a certain degree of preference can be necessarily obtained in combination with a range of SCF values corresponding to the same degree of preference.

From each of these two lists one element for each of the parameters CRC and SFC has been selected, creating a combination of features which was not disclosed in the application as originally filed.

Consequently claim 7 of the main request does not meet the requirements of Art. 123(2) EPC.

4. "New" auxiliary request 1 - filed at the oral proceedings before the board - Art. 123(2) EPC

The admissibility of auxiliary request 1 was expressly not objected to by the respondent. Claim 7 of this request differs from claim 7 of the main request only in that the feature CRC was defined as being 27 g/g or greater i.e. the most preferred range (see above) Hence, in the exercise of its discretionary power under Art. 13(1) RPBA, the board admitted auxiliary request 1 into the proceedings.

Although now both CRC and SFC are at the highest degree of preference, as disclosed in the description, as indicated with respect to the main request there is no link between the two parameters, or the various ranges thereof, meaning that the same considerations apply in that the subject-matter of claim 7 is the result of a non-disclosed combination of features (selection from two lists, no "pointer" to said combination).

Consequently the "new" auxiliary request 1 does not meet the requirements of Art. 123(2) EPC.

5. Auxiliary requests 2-7 - Art. 123(2) EPC
Since claim 7 of all these requests specify (at least) the CRC and SFC, albeit at different values to those specified in either the main request or auxiliary request 1 the same considerations in respect of the absence of a basis in the application as originally filed apply, as acknowledged by the appellant (see above).

Consequently for the same reasons as indicated for the main request, auxiliary requests 2-7 do not meet the requirements of Art. 123(2) EPC.

6. Auxiliary request 8

- 6.1 Art. 123(2) EPC

The respondent/opponent raised no objections and the board is aware of no reason to take a different view.

- 6.2 Art 54 EPC - D1

According to the decision under appeal, the combination of features of claim 1 then on file, in particular with reference to zirconium acetate complex was disclosed in D1.

D1 relates to crosslinked water absorbent polymers. According to claim 15 thereof, invoked in the decision under appeal, a process is disclosed which involves polymerising an ethylenically unsaturated acid functional monomer, which according to claim 10 of D1 can be acrylic acid or methacrylic acid with crosslinkers. To this extent, the subject-matter of operative claim 1 is not distinguished from the disclosure of D1.

According to the disclosure of D1 subsequent to the above listed steps, the powdered polymer is subjected to surface crosslinking involving treatment with a cation. Claim 15 of D1 does not define the cation. According to page 6, final paragraph of D1 the cation can be selected from monovalent, divalent and higher valent metals, a total of 14 different metals are listed, whereby zirconium is defined among the "further higher valent metals". According to page 7 line 2 aluminium salts are, however, preferred.

Regarding the anions a total of 8 are disclosed on page 6 of D1, whereby 6 are inorganic (e.g. Cl) and two are organic (lactate, acetate). Contrary to the position taken in the decision under appeal, no preference for any particular class (organic, inorganic) of anion or specific anion within either of these classes is expressed in D1. In particular, contrary to the position taken in the decision, there is no statement in D1 to the effect that acetate is preferred. The aluminium complexes exemplified on page 7 all have inorganic anions so that even from this disclosure there is no indication - even implicit - of a preference for acetate anion.

Thus D1 provides two separate lists, one for cations and one for anions. The decision held that D1 would disclose zirconium acetate, i.e. one of the complexes specified in operative claim 1.

However in order to arrive at this compound from the disclosure of D1 it is necessary to make two selections, one from the list of cations, one from the list of anions. There are no pointers to said combination, or indeed to any of the other complexes defined in claim 1. On the contrary, the clear preference in D1 is for Al cation and inorganic anions. Consequently the subject matter of operative claim 1 is distinguished from the disclosure of D1 by the

definition of the complex.

Accordingly the subject-matter of claim 1 is novel over the disclosure of D1.

The respondent explicitly did not raise an objection of lack of novelty in respect of claim 5. The board is aware of no reason to take a different position on this matter.

7. The decision under appeal did not take position on inventive step (see section IV, above).
Under these circumstances it is not appropriate for the board to deal with this. On the contrary, it is necessary and appropriate to remit the case for further prosecution so that the matter of inventive step can be dealt with.

8. During the oral proceedings before the board the respondent/opponent raised an objection for lack of sufficiency of disclosure against claim 5 of auxiliary request 8 corresponding to claim 12 as granted dependent on claim 11 (see section XII.(e), above). That objection concerned the feature "extraction ratio of the polyvalent metal atom is 80% by mass or smaller". In view of the necessary remittal for deciding on inventive step, and considering further that:
 - sufficiency of disclosure of the subject-matter of claim 12 as granted was not discussed at the oral proceedings before the opposition division;
 - no decision on sufficiency of disclosure was given in respect of claim 11 as granted, but
 - merely an opinion referring to the general knowledge of the person skilled in the art without however explaining how that general

knowledge would put the skilled person on a position to reproduce the invention of the patent in suit

the issue of sufficiency was not further debated at the oral proceedings before the Board and consequently no decision taken in that respect.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance for further prosecution on the basis of the eighth auxiliary request filed with the statement setting out the grounds of appeal.

The Registrar:

The Chairman:



B. ter Heijden

F. Rousseau

Decision electronically authenticated