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Datasheet for the decision of 17 September 2013

Case Number: T 2034/09 - 3.3.10

Application Number: 95301038.6

Publication Number: 668080

IPC: A61L15/60

Language of the proceedings: EN

Title of invention:
Water-absorbent agent, method for production thereof, and water-absorbent composition

Patent Proprietor:
NIPPON SHOKUBAI CO., LTD.

Opponent:
Stockhausen GmbH

Headword:

Relevant legal provisions:
EPC Art. 87(1), 100(a), 56, 123(2), 123(3), 54(2)
EPC 1973 Art. 54(3), 54(4)
RPBA Art. 12(1), 12(2), 13, 13(3), 13(1)

Keyword:
Novelty - main request (no)
Inventive step - (no)
- first, third, 3.1 and fourth auxiliary request
Inventive step - (yes) - fifth auxiliary request
Amendments - added subject-matter (yes)
- second auxiliary request

Decisions cited:
G 0002/98, T 0197/86, T 0020/81

Catchword:

Beschwerdekammern
Boards of Appeal
Chambres de recours

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Case Number: T 2034/09 - 3.3.10

D E C I S I O N
of Technical Board of Appeal 3.3.10
of 17 September 2013

Appellant: (Patent Proprietor)	NIPPON SHOKUBAI CO., LTD. 1-1, Koraibashi 4-chome Chuo-ku Osaka-shi, Osaka-fu 541 (JP)
Representative:	Bassil, Nicholas Charles Kilburn & Strode LLP 20 Red Lion Street London WC1R 4PJ (GB)
Respondent: (Opponent)	Stockhausen GmbH Bäkerpfad 25 47805 Krefeld (DE)
Representative:	Herzog, Martin Herzog Fiesser & Partner Patentanwälte Immermannstrasse 40 40210 Düsseldorf (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 13 August 2009 concerning maintenance of the European Patent No. 668080 in amended form.**

Composition of the Board:

Chairman: P. Gryczka
Members: R. Pérez Carlón
D. Rogers

Summary of Facts and Submissions

I. The appellant (patent proprietor) lodged an appeal against the decision of the opposition division to maintain European patent EP 668 080, filed as European patent application EP 95 301 038 claiming priority from JP 2029594 (P1) and JP 5036594 (P2), in amended form.

II. An opposition had been filed, on the grounds that the subject-matter of the patent in suit contained added subject-matter (Article 100(c) EPC), that the invention was not disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b) EPC), and that subject-matter of the patent as granted was not novel and did not involve an inventive step (Article 100(a) EPC).

III. *Inter alia*, the following documents were cited during the opposition proceedings:

D1: WO94/15651
D5: EP A 0 555 692
D13: EP A 0 744 435
D15a: JP A 07 33818, English translation
D16: US 5,061,259

IV. *Inter alia*, the following experimental evidence was submitted during the appeal proceedings:

D20: Statutory declaration of K. Ishizaki

V. The opposition division decided that the subject-matter of the then pending main request (patent as granted) was not novel over document D13, that the subject-matter of the then pending first to eleventh auxiliary requests was not inventive and that the then pending

twelfth auxiliary request fulfilled the requirements of the EPC.

VI. With the statement setting out the grounds for appeal, the appellant requested that the patent be maintained as granted (main request), and also filed auxiliary requests 1 to 9. Auxiliary request 3.1 was filed under cover of a letter dated 10 March 2011.

Claim 1 of the main request (patent as granted) reads as follows:

"A method for the production of a water-absorbent agent which comprises mixing together a water-absorbent resin, an additive, a cross-linking agent and water, ***characterised in that****: the water-absorbent resin has a water content of from 1 to 50% by weight, contains a carboxyl group and takes the form of irregular broken particles of an average particle diameter of from 200 to 600 µm including not more than 10% by weight of a fraction less than 150 µm in diameter; the additive is an inorganic and/or organic acid soluble in water and the cross-linking agent is capable of reacting with the carboxyl group on the water-absorbent resin."*

Claim 1 of the first auxiliary request contains, in addition to the wording of claim 1 of the main request the feature:

"...; and the resultant mixture is subsequently subjected to a heat treatment."

Claim 1 of the second auxiliary request contains, in addition to the wording of claim 1 of the main request, the features:

"...; the mixing is effected by the use of from 0.5 to 5 parts by weight of water based on 100 parts by weight of the water absorbent resin; and the resultant mixture is subsequently subjected to a heat treatment."

Claim 1 of the third auxiliary request contains, in addition to the features of claim 1 of the main request, the following:

"...; and the resultant mixture is subsequently subjected to a heat treatment at a temperature in the range of from 80 to 300°C."

Claim 1 of the auxiliary request 3.1 further restricts the temperature of the heat treatment with respect to claim 1 of the third auxiliary request to the range *"100 to 230°C".*

Claim 1 of the fourth auxiliary request contains, in addition to the features of claim 1 of the main request, the following features:

"...the acid dissociation index (pKa value) of the additive is in the range of from 2.0 to 4.0;..."
"...and the resultant mixture is subsequently subjected to a heat treatment."

Claim 1 of the fifth auxiliary request contains the features of claim 1 of the main request and additionally specifies that:

"... the additive is [...] selected from the group consisting of pyrophosphoric acid, tripolyphosphoric acid, phosphoric acid, sulfuric acid, hydrochloric acid, anisic acid, benzoic acid, formic acid, valeric acid, citric acid, glycoxylic acid, glycolic acid,

glycerin phosphoric acid, glutaric acid, chloroacetic acid, chloropropionic acid, cinnamic acid, succinic acid, acetic acid, tartaric acid, lactic acid, pyruvic acid, fumaric acid, propionic acid, 3-hydroxypropionic acid, malonic acid, butyric acid, isobutyric acid, imidinoacetic acid, malic acid, isothionic acid, citraconic acid, adipic acid, itaconic acid, crotonic acid, oxalic acid, salicylic acid, gluconic acid, gallic acid, sorbic acid and p-oxybenzoic acid"

and that:

"...; and the resultant mixture is subsequently subjected to a heat treatment."

VII. The appellant argued essentially as follows:

Paragraphs [32] and [31] of the first priority document P1 disclosed a method where the heat treatment was only optional. Therefore, although claim 1 of the main request did not require a heat treatment step, it was nevertheless entitled to the first priority date. D13, which was published after that date was, hence, not state of the art for the subject-matter of claim 1 of the main request which was, thus, novel.

Any of documents D5 or D15a could represent the closest prior art for the subject-matter of the first auxiliary request. The technical problem underlying the claimed invention was providing a method for obtaining a water-absorbent agent with a reduced amount of residual cross-linking agent without affecting the absorbent capacity. Said problem was effectively solved by the claimed method, which used a resin with an average particle diameter of from 200 to 600 micrometer including not more than 10% by weight of a fraction

less than 150 micrometer in diameter as starting material. This solution was not obvious with respect to the state of the art, and the subject-matter of claim 1 of the first auxiliary request was, therefore, inventive. The same arguments applied to the subject-matter of the auxiliary requests 3, 3.1 and 4.

The feature added in claim 1 of the second auxiliary request, namely "from 0.5 to 5 parts per weight of water based on 100 parts by weight of the water absorbent resin", found a basis in the first paragraph on page 23 and claim 9 of the application as originally filed. This amendment thus fulfilled the requirements of Article 123(2) EPC.

Document D13 disclosed a method for the production of a water-absorbent agent by mixing with lactic acid as an additive. However, since the priority document P1 already disclosed a method for producing a water-absorbent agent mixing with lactic acid as an additive and, hence, the right to the first priority date had been validly claimed for this embodiment, so that D13 was not state of the art and the subject-matter of claim 1 of the fifth auxiliary request was, thus, novel.

The feature "heat treatment" in claim 1 of the fifth auxiliary request meant any treatment by heat, of any intensity and any duration, and was, as such, clear.

The objection raised during the oral proceedings before the board by the respondent (opponent) that the invention was not sufficiently disclosed for it to be carried out, should not be admitted in the appeal proceedings since it was only raised at a very late stage of the proceedings, and the appellant was not

prepared to address it.

The subject-matter of the fifth auxiliary request differed from the closest prior art document D15a in the nature of the additive used and the particle distribution of the starting resin. Even if the problem underlying the claimed invention was considered merely to provide a further method for preparing water-absorbent agents, there was no indication in the art that the acids listed in claim 1 could be used as additives in the method claimed, so that the subject-matter of claim 1 was inventive.

Document D1 disclosed a method for the production of a water-absorbent agent by mixing phosphoric acid as an additive. However the priority document P1 already disclosed a method for producing a water-absorbent agent mixing phosphoric acid as an additive and, hence, the right to the first priority date had been validly claimed for this embodiment, for which D1 was not state of the art in the sense of Article 54(2) EPC.

VIII. The arguments of the respondent (opponent) were the following:

The priority document P1 only disclosed a process with a heat treatment. For this reason, the subject-matter of claim 1 of the main request which did not require a heat treatment was not entitled to the first priority date. Document D13, which disclosed the claimed method, was consequently state of the art and novelty destroying.

The respondent considered that any of D5, D15a and D16 could represent the closest prior art for the claimed invention. The sole problem solved by the subject-

matter of claim 1 of auxiliary requests 1, 3, 3.1, 4 and 5 was providing a further method for obtaining a water-absorbent agent and the solution proposed in claim 1 of these requests, namely using a resin with an average particle diameter of from 200 to 600 micrometers and no more than 10% by weight of a fraction less than 150 micrometers in diameter as the starting material was only an arbitrary choice among the size and size distribution of the particles used as starting material, with the consequence that the subject-matter of none of these requests was inventive.

The second auxiliary request contained added subject-matter, since no basis could be found in the application as originally filed for the feature "the mixing is effected by the use of from 0.5 to 5 parts by weight of water based on 100 parts by weight of the water absorbent resin".

The fifth auxiliary request should not be admitted into the proceedings since it had not been part of the opposition proceedings. The respondent argued that, since the objection that the invention claimed was not sufficiently disclosed had already been part of the opposition proceedings, such a ground of opposition could be raised, again, during the appeal proceedings. The feature "heat treatment" in claim 1 was not clear. Claim 1 of the fifth auxiliary request was not entitled to the first priority date and document D13, which was thus state of the art, rendered its subject-matter not novel. In addition to the inventive step objection mentioned above considering document D15a as the closest prior art, document D1 was also a relevant state of the art for assessing inventive step since it disclosed that the additive was phosphoric acid, which was one of the acids envisaged by claim 1 of the fifth

auxiliary request. The difference with respect to D1 was merely that the starting resin was not explicitly disclosed as having an average particle diameter of from 200 to 600 micrometers and no more than 10% by weight of a fraction less than 150 micrometers in diameter, the problem was providing an alternative method for the production of a water-absorbent resin and the claimed solution was a mere arbitrary selection among the sizes of the suitable starting materials.

IX. Oral proceedings were held before the board on 17 September 2013.

X. The final requests of the parties were the following:

- The appellant requested that the decision under appeal be set aside and that, as a main request, the patent be maintained as granted, or alternatively, that the patent be maintained upon the basis of any of auxiliary requests 1 to 3, 3.1 and 4 to 9, auxiliary request 3.1 having been filed under cover of a letter dated 10 March 2011, all the other auxiliary requests having been filed with the statement of grounds of appeal.

- The respondent requested that the appeal be dismissed.

XI. At the end of the oral proceedings, the decision was announced.

Reasons for the Decision

1. The appeal is admissible.

Main request:

2. Right to priority:

2.1 The opposition division considered that the appellant did not validly claim the right to priority from any of documents JP-6-020295 (P1) and JP 6-050365 (P2) for the subject-matter of claim 1 of the main request.
The patentee did not contest that priority could not be validly claimed on the basis of the second of these documents.

With respect to the first priority document P1, the point of dispute between the parties was whether it disclosed a method for the production of a water-absorbent agent which did not necessarily include a heat treatment, since such a heat treatment is not a feature of claim 1 of the main request.

2.2 The appellant considered that paragraph [32] of P1, which reads:

"*when this invention adopts the heat-treatment...*"

and paragraph [31] of P1, which reads:

"*this invention contemplates a procedure which comprises mixing a water-absorbent resin with a cross-linking agent and an additive*"

constituted a clear und unambiguous disclosure of a process in which the heat treatment was merely optional.

2.3 However, paragraphs [31] and [32] of the priority document P1 cannot be taken in isolation and must be

read in the light of the whole disclosure of document P1 which in fact only discloses a process including a heat treatment, as can be seen from claim 1, its examples, paragraphs [11] and [12], and even from the paragraph quoted by the appellant, [31], which mentions that

"this invention contemplates a procedure which comprises [...] and further heat-treating the resultant mixture".

Additionally, paragraph [31] of document P1, cited by the appellant for supporting its case, indicates a list of drawbacks linked to using a heat treatment at a temperature lower than 80°C. Taking into account this sentence and the whole disclosure of P1, it can only be concluded that the part of this paragraph quoted by the appellant (see 2.2) refers to the point of time "when" the heat temperature needs to be made, and does not disclose such a heat treatment only as an optional step.

Since document P1 discloses a method which necessarily comprises a heat treatment, whereas such a heat treatment is not a feature of claim 1 of the main request, the priority document P1 and the subject-matter of claim 1 do not relate to the same invention as required by Article 87(1) EPC. Hence, claim 1 of the patent as granted is not entitled to the right of priority from document P1, with the consequence that document D13 is state of the art in the sense of Article 54(3)(4) EPC 1973.

3. Novelty:

It has not been contested that document D13 disclosed all the features of claim 1, and no arguments in this respect had been given during the oral proceedings; the appellant had only made a statement that the invention could not be directly and unambiguously derived from document D13 without providing any further detailed explanation. Under these circumstances, the board does not see any reason to depart from the view of the opposition division that document D13 discloses all the features of claim 1 of the main request, with the consequence that the ground mentioned under Article 100(a) EPC precludes the maintenance of the patent as granted.

First auxiliary request:

4. Novelty:

Claim 1 of the first auxiliary request has been amended by adding a heat treatment step.

No novelty objection has been raised against the subject-matter of this claim, and the board does not see a reason to depart from this view in the light of the available prior art.

5. Inventive step:

Claim 1 of the first auxiliary request is directed to a method for the production of a water-absorbing agent comprising mixing together

- a water-absorbing resin, which
  - has a water content of from 1 to 50%
  - contains a carboxyl group
  - takes the form of irregular, broken particles

- the particles have an average particle diameter of from 200 to 600 micrometers,
- the particles include no more than 10% of particles smaller than 150 micrometers,

- an additive, which is an inorganic acid and/or organic acid soluble in water, and
- a cross-linking agent which is capable of reacting with the carboxyl group on the resin,

followed by a heat treatment.

5.1 Closest prior art:

5.1.1 The parties considered that document D15a could represent the closest prior art. D15a aims at solving the same problem as the patent in suit, namely reducing the amount of residual monomers in the water absorbing resin while providing high absorbency (see page 3, lines 18-19 of D15a and table 1 of the patent in suit), by treating a water absorbing resin, a cross linking agent and a reducing compound in water and heating the resulting mixture at 60 to 250°C (claim 1). Preferably the resin contains 30% or less of water (page 6, lines 20-21). Among the reducing agents, D15a discloses sulfurous acid (claim 6) and various amino acids (page 8, lines 12-14). The reference example, which discloses the preparation of the resin used as starting material, discloses drying the resin with hot air at 150°C, grinding, and sieving through a 20 mesh sieve to obtain a resin with a water content of 6%.

It was agreed by the parties that document D15a fails to disclose that the water absorbing resins used in said process have an average particle diameter of from 200 to 600 micrometers and no more than 10% by weight of a fraction less than 150 micrometer in diameter, as

required by claim 1.

5.1.2 The parties cited also documents D5 and D16 as possible starting points for the assessment of inventive step.

However, document D5 has less features in common than D15a with the claimed method since it additionally fails to disclose a water soluble acid as additive.

Document D16 discloses a water-absorbing resin, but fails to disclose the obtention of a water absorbing agent by treating said resin with an additive and a cross linking agent followed by a heat treatment. Therefore, D16 also differs from the subject-matter claimed in a larger amount than D15a.

For these reasons, document D15a is closer to the claimed invention than D5 and D16 and thus represents the closest prior art.

5.2 Technical problem underlying the invention:

The appellant has formulated the technical problem underlying the invention as providing a method for the production of a water-absorbent agent which allows reducing the amount of residual cross-linking compound in the final product without adversely affecting its absorption capacity.

5.3 Solution:

The claimed solution to this problem is the process subject-matter of claim 1, characterised by using a resin with an average particle diameter of from 200 to 600 micrometers, and no more than 10% by weight of a fraction less than 150 micrometers in diameter as the

starting material.

5.4 Success:

5.4.1 The appellant relied on document D20 and paragraph [34] of the patent in suit for proving that the problem underlying the claimed invention had been effectively solved.

5.4.2 Document D20 describes tests which have been carried out with an absorbent resin consisting only of particles with a diameter below 150 micrometers and which aimed at providing a comparison with the closest prior art D15a.

However, the starting materials in example 1 of the patent in suit differ from those in the reference example of D15a in an additional sieving through a ASTM-50 mesh sieve, which reduced the amount of finely divided particles of diameter smaller than 300 micrometers in said starting material. This necessarily implies that the resin disclosed in the reference example of D15a must include particles larger ca. 300 micrometer, since otherwise no material would have been left after the sieving step in example 1 of the patent in suit.

From this reasons, it is obvious that the particle distribution of the reference example of D15a has not been reproduced in D20 since the particles disclosed in said example do not only consist on fines with a diameter below 150 micrometers. For this reason, the experiment of D20 does not represent a fair comparison to the disclosure of the closest prior art.

5.4.3 Paragraph [34] of the patent in suit merely mentions that:

"it should be noted that if the amount of the fraction of resin having particle diameters of less than 150 micrometers exceeds 10% by weight, the decrease of the amount of a residue of the cross-linking agent possibly will not be easily attained".

This statement is however devoid of any experimental evidence and thus a mere speculation which cannot provide a basis for a technical effect.

5.4.4 According to the jurisprudence of the Boards of Appeal, alleged but unsupported advantages cannot be taken into consideration in respect of the determination of the problem underlying the invention (see e.g. decision T 20/81, OJ EPO 1982, 217, point 3, last paragraph of the reasons). As the alleged improvement in terms of the amount of cross-linking agent in the water-absorbent agent lacks the required support, the technical problem as defined above needs reformulation.

Thus, in view of the teaching of D15a, the problem underlying the claimed invention is the provision of a further method for the production of a water-absorbent agent.

It has not been disputed that this technical problem has been solved by the method that is the subject-matter of claim 1, in which the starting material is a resin with an average particle diameter of from 200 to 600 micrometers, and no more than 10% by weight of a fraction less than 150 micrometers in diameter.

5.5 Finally, it remains to be examined whether the claimed solution was obvious for the person skilled in the art:

Document D16 , which also concerns water absorbent agents, see column 1, lines 20-27, shows that the absorbing capacity of the resin decreases with decreasing particle size (table 1) and that specially preferred are particles with a mass median particle size from 420 to 600 microns (claim 9) which contain less than 5%, preferably from 1 to 3% of particles smaller than 149 microns (table on column 8). When trying to obtain an alternative to the process disclosed in D15a, the skilled person will turn to the particularly advantageous resin of D16 and arrive, thus, to the subject-matter of claim 1 without using inventive skills.

The appellant argued that documents D15a and D16 belonged to different technical fields, since the latter failed to address the problem posed in the present application, and for this reason their teaching could only be combined with the benefit of hindsight.

However, both D15a and D16 deal with the problem of obtaining water-absorbent agents, which is also the problem underlying the present invention (see 5.4 above). Hence, both documents belong to the technical field of the claimed invention and the skilled person would consider combining their disclosure. This argument of the appellant must be, thus, dismissed.

The first auxiliary request is, therefore, not allowable since it does not fulfill the requirements of Article 56 EPC.

Second auxiliary request:

6. Amendments:

Claim 1 of the second auxiliary request contains the feature "the mixing is effected by the use of from 0.5 to 5 parts per weight of water based on 100 parts by weight of the water absorbent resin".

As a basis for this amendment the appellant has cited the first paragraph on page 23 and claim 9 of the application as originally filed.

Page 23 discloses 0.5 to 5 parts by weight of water based on 100 parts per weight of the *solids* of the absorbent resin, whereas claim 1 requires a 0.5 to 5 parts per weight of water with respect to the weight of the water absorbent resin. Since the resin defined in claim 1 contains up to 50% of water, i.e. it can have a solid content as low as 50%, there is a difference between the relative amount with respect to the solid content of the resin as defined on page 23 of the description, and the numerically identical relative amount with respect to the whole resin, as required by claim 1. Therefore, the passage on page 23 does not provide a basis for the afore-mentioned feature.

Claim 9 of the application as filed discloses a different lower limit of the water relative amount (0.01 parts per weight) and, thus, does not provide a basis for the lower limit of 0.5 in claim 1, either.

The feature of claim 1 "the mixing is effected by the use of from 0.5 to 5 parts per weight of water based on 100 parts by weight of the water absorbent resin", therefore, extends beyond the content of the

application as filed (Article 123(2) EPC), with the consequence that the second auxiliary request is not allowable.

Third auxiliary request and auxiliary request 3.1:

7. Inventive step:

Claim 1 of these requests further defines the temperature at which the heat treatment has been carried out, namely at 80-300°C in auxiliary request 3 and at 100-230°C in auxiliary request 3.1.

Document D15a discloses a preferred range for the heat treatment of 90 to 230°C (page 11, line 19), in all the examples the heat treatment has been carried out at 180°C.

With respect to document D15a, the subject-matter of claim 1 of the auxiliary requests 3 and 3.1 does not add any distinguishing feature to those of the first auxiliary request, with the consequence that the inventive step objection under point 4. above applies in the same manner to the subject-matter of claim 1 of these requests.

The subject-matter of auxiliary requests 3 and 3.1 is thus not inventive as required by Article 56 EPC and these requests are, therefore, not allowable.

Fourth auxiliary request:

8. Inventive step:

Claim 1 of the fourth auxiliary request contains the feature "the acid dissociation index (pKa value) of the

additive is in the range of from 2.0 to 4.0".

The appellant has not provided evidence which could prove that the amino acids disclosed on page 8 of document D15a have a pKa outside the range defined in claim 1. During the oral proceedings before the board, the appellant had not contested that the pKa of aspartic acid is 3.9.

For this reason, the subject-matter of the fourth auxiliary request does not contain any distinguishing feature additional to those of claim 1 of the first auxiliary request, with the consequence that the inventive step objections explained in point 4. above apply in the same manner to the subject-matter of claim 1 of the fourth auxiliary request. This request is, therefore, not allowable.

Fifth auxiliary request:

9. Admissibility:

The fifth auxiliary request was filed with the statement setting out the grounds of appeal and was not part of the opposition proceedings. The respondent requested that this request be held inadmissible, for the sole reason that it had not been filed with the notice of appeal.

According to Article 12(1) of the Rules of Procedure of the Boards of Appeal (RPBA), appeal proceedings shall be based on the notice of appeal and statement of grounds of appeal and in cases where there is more than one party, any written reply of the other party or parties filed within four months of the statement of the grounds of appeal. Article 12(2) PRBA requires that

the statement of grounds of appeal shall contain an appellant's complete case; this requirement does not apply, however, to the notice of appeal. Furthermore, the respondent had sufficient time to provide arguments against it since the request was filed in December 2009 whereas the oral proceedings before the board took place in September 2013. For these reasons, the board makes use of its discretion to admit the fifth auxiliary request into the proceedings.

The respondent also argued that the appeal proceedings shall only consider the validity of the decision of the opposition division.

However, new requests containing amended claims may be admitted in appeal proceedings, although the admissibility of such requests is a matter of the discretion of the boards (Article 13 RPBA). The board exercises its discretion to admit the fifth auxiliary request.

10. Amendments:

The respondent stated during the oral proceedings before the board that it did not have any formal objection with respect the fifth auxiliary request.

Claim 1 of the fifth auxiliary request finds a basis on the combination of claims 1 and 10 as originally filed, the passage on page 14, line 16 indicating both the presence of water and its content of the resin, page 25, line 5, disclosing the subsequent heat treatment, and the last paragraph on page 15 disclosing the list of additives as in claim 1 (Article 123(2) EPC).

Claim 1 of the fifth auxiliary request does not extend

the scope of protection conferred by the patent as granted (Article 123(3) EPC) since it has been restricted *inter alia* by specifying the nature of the additive.

11. Clarity:

The board concurs with the opposition division and the appellant that the feature "heat treatment" in claim 1 has the meaning of applying heat with any intensity and for any period of time. As such, the feature "heat treatment", although broad, is considered clear (Article 84 EPC).

12. Sufficiency of disclosure:

During the oral proceedings before the board, the respondent argued that the claimed invention was not sufficiently disclosed for it to be carried out. Although this objection had already been dealt with during the opposition proceedings and the opposition division arrived at the conclusion that the invention was sufficiently disclosed, the lack of any written argument on this ground from the respondent during the appeal proceedings resulted in the board and the other party being taken by surprise by this newly raised issue.

According to Article 12(2) of the RPBA, the reply to the statement setting out the grounds of appeal shall contain the respondent's complete case. Any amendment to a party's case may only be admitted under the board's discretion (Article 13(1) RPBA). In the present case, the board considers that the appellant has been caught by surprise by the new objection, so that it could not be expected to provide arguments on this

issue during the oral proceedings, with the consequence that the oral proceedings would have been postponed if this objection were to be admitted into the proceedings. The board, therefore, decided not to admit this late filed objection into the proceedings (Article 13(3) RPBA).

13. Novelty:

The respondent argued that no right of priority could be derived from document P1 since said priority document did not disclose all the additives now required by claim 1. Document D13 was, hence, state of the art under Article 54(3) EPC 1973 and Article 54(4) EPC 1973 for the subject-matter of the fifth auxiliary request. Since example 6 of document D13 disclosed a method in which the additive was lactic acid, the subject-matter of claim 1 of the fifth auxiliary request was not novel.

However, the priority document P1 discloses (page 11, line 20) a method using lactic acid as an additive. The additives now required by claim 1 are a limited number of clearly defined alternatives (G 2/98, OJ EPO 2001, 413, point 6.7), so that the method in which lactic acid is an additive can enjoy the right of priority from P1. Since this priority date is earlier than any of the priority dates claimed for D13, D13 is not state of the art for the embodiment within the subject-matter of claim 1 of the fifth auxiliary request in which the additive is lactic acid.

The subject-matter of claim 1 of the fifth auxiliary request is, therefore, novel in the sense of Article 54(1) 1973 EPC over D13.

14. Inventive step:

14.1 Closest prior art:

Document D15a remains the closest prior art. It has not been disputed by the parties that this document fails to disclose a resin with an average particle diameter of from 200 to 600 micrometers, not more than 10% by weight of a fraction less than 150 micrometers in diameter, and the additives required by claim 1.

14.2 Technical problem underlying the invention:

The appellant defined the problem to be solved as the provision of a method for the production of a water-absorbent agent which reduced the amount of residual cross-linking agent without adversely affecting the absorption capacity of the product obtained. This was contested by the respondent, which considered that the problem could not be more ambitious than the provision of a further method. Since an inventive step can be acknowledged even if the problem is defined as being merely the provision of a further method (see points 14.3 to 14.7 below) it will be assumed in the respondent's favour, that the problem underlying the invention lies in providing a further method for the preparation of a water-absorbent agent.

14.3 Solution:

The solution proposed by the subject-matter of claim 1 of the fifth auxiliary request is a method in which the resin has an average particle diameter of from 200 to 600 micrometers and no more than 10% by weight of a fraction less than 150 micrometers in diameter, and the additive is selected from the list consisting of

pyrophosphoric acid, tripolyphosphoric acid, phosphoric acid, sulfuric acid, hydrochloric acid, anisic acid, benzoic acid, formic acid, valeric acid, citric acid, glycoxylic acid, glycolic acid, glycerin phosphoric acid, glutaric acid, chloroacetic acid, chloropropionic acid, cinnamic acid, succinic acid, acetic acid, tartaric acid, lactic acid, pyruvic acid, fumaric acid, propionic acid, 3-hydroxypropionic acid, malonic acid, butyric acid, isobutyric acid, imidinoacetic acid, malic acid, isothionic acid, citraconic acid, adipic acid, itaconic acid, crotonic acid, oxalic acid, salicylic acid, gluconic acid, gallic acid, sorbic acid and p-oxybenzoic acid.

14.4 Success:

The examples in the patent in suit show that the claimed method allows a water-absorbent agent to be obtained.

The respondent argued, however, that since the temperature of the heat treatment was not a feature of claim 1, said claim included embodiments which did not solve the problem underlying the claimed invention, since the cross linking agent and the resin would not react if the temperature is too low. However, no evidence in this respect has been provided.

It is thus considered that the technical problem underlying the claimed invention as defined in point 14.2 above is credibly solved by the method of claim 1.

14.5 Finally, it remains to be examined whether the claimed solution was obvious for the person skilled in the art:

The method for the production of a water absorbent

agent disclosed in the closest prior art document D15a requires, as additives, "reducing agents" (see claim 1), whereas according to the claimed invention the additives are "acids" (paragraph [36]). Since acids and reducing agents represent two different classes of chemical compounds in view of their different chemical properties, it is not obvious for the skilled person to replace "reducing agents" by "acids" in order to provide a further method to that disclosed in D15a.

Although some of the reducing agents disclosed in document D15a are acids, document D15a does not lead the skilled reader towards other acids, but towards other reducing agents. The respondent did not rely on any other document on file which would disclose using acids for preparing a water-absorbent agent. Therefore, in the absence of any prior art document which would lead the skilled person to choose these particular acids as additives, an inventive step in the sense of Article 56 EPC is acknowledged.

14.6 The respondent has argued that if any of the acids required by claim 1 was a reducing agent, the skilled person would have a motivation to choose it as an additive in the light of D15a.

However, no evidence has been provided that any of the acids listed in claim 1 could also be a reducing agent. In the absence of this evidence, this argument of the respondent is mere speculation and must, thus, be dismissed.

14.7 The respondent has also provided an alternative line of argument directed to the method according to claim 1 in which the additive is phosphoric acid.

Document D1 discloses (step C) on page 15) the preparation of a water absorbent agent by mixing a water absorbent resin which contains 10.5% of water and an 85% aqueous solution of phosphoric acid. D1 fails to disclose that said water absorbent resin has an average particle diameter of from 200 to 600 micrometers including no more than 10% by weight of a fraction less than 150 micrometers in diameter.

The respondent argued that not every additive defined in claim 1 was included in the priority document P1 and, hence, claim 1 of the fifth auxiliary request did not validly claim priority from this document. Document D1 was, therefore, state of the art under Article 54(2) EPC relevant for assessing inventive step under Article 56 EPC of the embodiment that the additive was phosphoric acid.

However, the priority document P1 discloses phosphoric acid among the suitable additives (page 11, line 15), which are a limited number of clearly defined alternative subject-matters (G 2/98, supra). Since the embodiment of claim 1 that the additive is phosphoric acid validly claims is entitled to the right of priority from P1, document D1 is not state of the art in the sense of Article 54(2) EPC for said subject-matter.

The respondent has not raised any objection taking D1 as the closest prior art with respect to those embodiments of claim 1 in which the additive was not mentioned in the priority document P1 and which are not entitled to the first priority date. The board on its own does not see any reason to take a different view, since the teaching of D1 is restricted to the use of phosphoric acid as additive. Hence, it is unnecessary

to go into more details in this respect.

This argument of the respondent is thus dismissed.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent with the following claims and a description to be adapted:

   Claims 1-24 of the fifth auxiliary request filed with the statement of grounds of appeal.

The Registrar: The Chairman:

C. Rodríguez Rodríguez P. Gryczka

Decision electronically authenticated