

Internal distribution code:

- (A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

**Datasheet for the decision
of 24 January 2019**

Case Number: T 2383/15 - 3.3.03

Application Number: 06731728.9

Publication Number: 1879930

IPC: C08F22/10, C08K5/01, C08F20/06,
C08K3/26, C08K3/22, C08K5/03,
A61L15/60

Language of the proceedings: EN

Title of invention:
PRODUCTION PROCESS OF WATER-ABSORBENT RESIN BASED ON A
POLYACRYLIC ACID OR ITS SALT

Patent Proprietor:
Nippon Shokubai Co., Ltd.

Opponents:
Evonik Degussa GmbH
BASF SE

Relevant legal provisions:
EPC Art. 56
RPBA Art. 12(4)

Keyword:

Inventive step - (main request and auxiliary requests 1-3; no)
Requests filed with the statement of grounds of appeal -
admitted (auxiliary requests 4-8; no)



Beschwerdekammern
Boards of Appeal
Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 2383/15 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 24 January 2019

Appellant: Nippon Shokubai Co., Ltd.
(Patent Proprietor) 1-1, Koraibashi 4-chome
Chuo-ku
Osaka-shi, Osaka 541-0043 (JP)

Representative: Mai Dörr Besier
European Patent Attorneys
European Trademark Attorneys
Patentanwälte
Kreuzberger Ring 64
65205 Wiesbaden (DE)

Respondent: Evonik Degussa GmbH
(Opponent 1) Rellinghauserstrasse 1-11
45128 Essen (DE)

Representative: Herzog, Fiesser & Partner Patentanwälte PartG
mbH
Immermannstrasse 40
40210 Düsseldorf (DE)

(Opponent 2) BASF SE
67056 Ludwigshafen (DE)

Representative: Reitstötter Kinzebach
Patentanwälte
Sternwartstrasse 4
81679 München (DE)

Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 16 October 2015
revoking European patent No. 1879930 pursuant to
Article 101(3)(b) EPC.**

Composition of the Board:

Chairman D. Semino
Members: O. Dury
 C. Brandt

Summary of Facts and Submissions

- I. The appeal by the patent proprietor lies from the decision of the opposition division posted on 16 October 2015 revoking European patent No. 1 879 930.
- II. Two notices of opposition to the patent were filed requesting revocation of the patent in its entirety.
- III. Considering that, during the appeal proceedings, opponent 2 withdrew its opposition (see letter dated 22 March 2018), it is not party to the proceedings any more as far as substantive issues are concerned.
- IV. In the contested decision the following documents were *inter alia* cited:

D2: US 2004/0110914

D3: WO 2004/061010

D3a: EP 1 577 349

D3a, which was published between the priority and the filing date of the patent in suit, is the European patent application based on D3 and is in the English language. Since D3, which was published before the priority date of the patent in suit, is an international application in Japanese, any reference in the present decision to the content of D3 will be made, in agreement with the parties, in view of D3a.

- V. The contested decision was based on the patent as granted as main request as well as on auxiliary requests 1, 2, 4 and 5 filed with letter of 31 July 2015 and auxiliary request 3a filed on 1 October 2015 during the oral proceedings before the

opposition division.

Claim 1 of the **main request** read as follows:

"1. A process for producing a polyacrylic acid (salt) water-absorbent resin by polymerizing an acrylic acid composition including acrylic acid and/or its salt as a main component,

the process comprising the step (a) of neutralizing the acrylic acid included in the acrylic acid composition with a basic composition; and then polymerizing the resultant neutralized product, thereby forming a hydrogel crosslinked polymer,

the acrylic acid composition including: (i) methoxyphenol in a content of 10 to 200 ppm by weight relative to the weight of the acrylic acid; and (ii) protoanemonin and/or furfural in a content of 0.01 to 5 ppm by weight relative to the weight of the acrylic acid;

the basic composition including a basic compound selected from the group consisting of an alkaline-metal (hydrogen)carbonate, alkaline-metal hydroxide, ammonia, or organic amine and a iron-containing compound, wherein the basic composition has an iron content of 0.2 to 5.0 ppm by weight in terms of Fe₂O₃ as determined by ICP light emission analysis according to JISK1200-6."

Claim 1 of **auxiliary request 1** differed from claim 1 of the main request in that feature (ii) read as follows (additions as compared to claim 1 of the main request in **bold**, deletions in ~~strikethrough~~):

"(ii) protoanemonin **in a content of 0.01 to 5 ppm by weight relative to the weight of the acrylic acid** and/
~~or~~ furfural in a content of 0.01 to 5 ppm by weight relative to the weight of the acrylic acid;"

Claim 1 of **auxiliary request 2** read as follows
(additions as compared to claim 1 of the main request in **bold**):

"1. A process for producing a polyacrylic acid (salt) water-absorbent resin by polymerizing an acrylic acid composition including acrylic acid and/or its salt as a main component,

the process comprising **as first step** the step (a) of neutralizing the acrylic acid included in the acrylic acid composition with a basic composition; and then polymerizing the resultant neutralized product, thereby forming a hydrogel crosslinked polymer,
as second step, the step (b) of drying the hydrogel crosslinked polymer by application of heat and as third step the step (c) of subjecting the resultant hydrogel crosslinked polymer to surface cross-linking treatment by application of heat, wherein the heating temperature in the steps (b) and (c) is not lower than a boiling temperature of the unpolymerizable organic compound,

the acrylic acid composition including: (i) methoxyphenol in a content of 10 to 200 ppm by weight relative to the weight of the acrylic acid; and (ii) protoanemonin and/or furfural in a content of 0.01 to 5 ppm by weight relative to the weight of the acrylic acid;

the basic composition including a basic compound

selected from the group consisting of an alkaline-metal (hydrogen)carbonate, alkaline-metal hydroxide, ammonia, or organic amine and a iron-containing compound, wherein the basic composition has an iron content of 0.2 to 5.0 ppm by weight in terms of Fe_2O_3 as determined by ICP light emission analysis according to JISK1200-6,

and wherein the water-absorbent resin obtained has a liquid permeability under pressure (PPUP) in the range from 50 to 100%."

Claim 1 of **auxiliary request 3a** differed from claim 1 of the main request in that (additions as compared to claim 1 of the main request in **bold**, deletions in ~~strikethrough~~):

- the range in feature (ii) was amended to read "~~0.01~~ **1** to 5 ppm"; and
- the wording "wherein the basic composition has an iron content of 0.2 to 5.0 ppm by weight in terms of Fe_2O_3 " was replaced by "wherein the basic composition has an iron content of 0.2 to 5.0 ppm by weight **relative to solids content of the basic composition** in terms of Fe_2O_3 ".

Claim 1 of **auxiliary request 4** differed from claim 1 of the main request in that the wording "wherein the basic composition has an iron content of 0.2 to 5.0 ppm by weight in terms of Fe_2O_3 " was replaced by "wherein the basic composition has **an iron of trivalent and** an iron content of 0.2 to 5.0 ppm by weight **relative to solids content of the basic composition** in terms of Fe_2O_3 " (additions as compared to claim 1 of the main request in **bold**).

Claim 1 of **auxiliary request 5** differed from claim 1 of the main request in that the wording (additions as compared to claim 1 of the main request in **bold**, deletions in ~~strikethrough~~)

"wherein the basic composition has an iron content of 0.2 to 5.0 ppm by weight in terms of Fe_2O_3 "

was replaced by

"wherein the basic composition has an iron (**Fe_2O_3**) ~~content~~ of 0.2 to 5.0 ppm by weight **relative to solids content of the basic composition** in terms of Fe_2O_3 ".

VI. In its decision the opposition division held, *inter alia*, that

- the main request did not fulfil the requirements of Article 123(2) EPC;
- auxiliary request 1 did not fulfil the requirements of Article 123(2) and (3) EPC;
- auxiliary request 2 did not fulfil the requirements of Article 123(2) EPC and Article 84 EPC;
- auxiliary request 3a fulfilled the requirements of sufficiency of disclosure as well as of Article 54, 84 and 123(2) and (3) EPC but was not inventive starting from D2 as closest prior art;
- auxiliary request 4 did not fulfil the requirements of sufficiency of disclosure and of Article 84 EPC;
- auxiliary request 5 neither fulfilled the requirements of sufficiency of disclosure, nor of Rule 80 EPC, Article 123(3) EPC and Article 84 EPC.

VII. The patent proprietor (appellant) lodged an appeal against the above decision and, in its statement of grounds of appeal, requested that the decision of the opposition division be set aside and that the opposition be dismissed (main request) or, alternatively, that the patent be maintained in amended form according to any of the following requests, in that order: auxiliary requests 1, 2, 4 to 8 and 3, all filed with the statement of grounds of appeal.

Claim 1 of **auxiliary requests 1 and 2** was identical to claim 1 of auxiliary requests 1 and 2, respectively, dealt with in the contested decision.

Claim 1 of **auxiliary request 4** differed from claim 1 of auxiliary request 4 dealt with in the contested decision in that the wording (additions as compared to claim 1 of the main request in **bold**)

"wherein the basic composition has **an iron of trivalent and** an iron content of 0.2 to 5.0 ppm by weight **relative to solids content of the basic composition** in terms of Fe_2O_3 as determined by ICP light emission analysis according to JISK1200-6"

was replaced by

"wherein the basic composition has an iron content of 0.2 to 5.0 ppm by weight **relative to solids content of the basic composition** in terms of Fe_2O_3 as determined by ICP light emission analysis according to JISK1200-6, **and wherein the iron in the basic composition is trivalent iron.**"

Claim 1 of **auxiliary request 5** differed from claim 1 of auxiliary request 5 dealt with in the contested

decision in that

- the expression into bracket "(Fe₂O₃)" was deleted;
- the word "content", which had been deleted as compared to claim 1 of the main request, was reintroduced at the same location;
- the following features were added at the end of the claim:

"wherein:

as a iron-containing compound iron (III) oxide is used and the basic composition has an iron (III) oxide content of 0.2 to 5.0 ppm by weight relative to solids content of the basic composition."

Claim 1 of **auxiliary requests 6 to 8** corresponded to claim 1 of auxiliary requests 2, 4 and 5 filed with the statement of grounds of appeal, respectively, whereby the following features were added at the end of the claim (addition as compared to claim 1 of the main request in **bold**):

"and wherein a polyvalent carboxylic acid and its salt in an amount of 10 ppm to 1 % is added to (A) a monomer before being polymerized or (B) a hydrogel crosslinked polymer after being polymerized, prior or subsequent to the neutralization of the (A) or (B)".

Claim 1 of **auxiliary request 3** was identical to claim 1 of auxiliary request 3a dealt with in the contested decision (see section V above).

VIII. With letter dated 12 July 2016, opponent 1 (who is, as indicated in section III above, the sole remaining

respondent and will therefore be referred to in the present decision as "the respondent") requested that the appeal be dismissed and that auxiliary requests 4 and 5 be not admitted into the proceedings.

- IX. With a communication sent in preparation of oral proceedings, the Board set out its preliminary view of the case.
- X. With letter of 14 November 2018, the respondent *inter alia* requested that auxiliary requests 6 to 8 be not admitted into the proceedings.
- XI. With letter of 15 January 2019, the respondent announced that he would not attend the oral proceedings.
- XII. Oral proceedings were held on 24 January 2019 in the presence of the appellant only, as announced.
- XIII. The arguments of the appellant, as far as relevant to the present decision, were essentially as follows:

Main request - Inventive step

(a) Example 8 of D2 constituted the closest prior art and the subject-matter of claim 1 of the main request differed therefrom in the following features:

- the specific amount of protoanemonin and/or furfural as specified in granted claim 1, which was not specifically disclosed in D2;
- a specific amount of iron as defined in granted claim 1 was present in the basic composition used

in the neutralisation step (a), whereas no iron content was disclosed in D2 in respect of the basic composition used in the neutralisation step carried out in example 8. In that respect, it was acknowledged during the oral proceedings before the Board that the amount of iron used in example 8 of D2 was in the range defined in operative claim 1, contrary to what had been argued in writing, so that the amount of iron did not constitute a distinguishing feature in itself. Rather, the difference between the process of claim 1 and the one of example 8 of D2 in relation to the iron component was only that the concentration of iron was controlled already at the neutralisation stage.

Examples 1-2 and comparative examples 1-2 of the patent in suit showed that the technical problem effectively solved over the closest prior art resided in the provision of a process for producing a water-absorbent resin having lower amounts of extractables and improved coloration. In that respect, it was acknowledged during the oral proceedings before the Board that, contrary to what had been argued in writing, no fair comparison could be made between the examples of the patent in suit illustrating the subject-matter being claimed and the one according to example 8 of D2. However, such a comparison was unnecessary because comparative examples 1 and 2 of the patent in suit were in fact closer to the subject-matter being claimed than example 8 of D2.

There was no hint in the prior art to solve the above identified problem by modifying the process of example 8 of D2 according to claim 1 of the main

request.

Should an improvement over D2 not be acknowledged, the subject-matter of operative claim 1 constituted nevertheless a non-obvious alternative to the process according to example 8 of D2 since there was no hint in the prior art to control the amount of iron in the basic composition used for the neutralisation step. In particular, D2 only taught the use of iron to accelerate the polymerisation but not to improve the resin properties. D2 further failed to teach the use of iron already during the neutralisation stage. Also, the skilled person would not consider using iron already at the neutralisation step because it was generally known that this would lead to coloration problems.

For those reasons, the subject-matter of operative claim 1 was inventive.

Auxiliary requests 1 to 3 - Inventive step

- (b) The same arguments as outlined for the main request were valid in respect of the inventive step of claim 1 of each of auxiliary requests 1 and 3.

- (c) Regarding the inventive step of claim 1 of auxiliary request 2, it was indicated during the oral proceedings before the Board that the same arguments as outlined for claim 1 of the main request were valid, also when starting from example 13 of D2 as closest prior art, in particular because the PPUP parameter specified in the claim was a direct consequence of controlling the amount of iron in the basic composition used for the neutralisation stage. Examples 5-7 and

comparative example 5 of the patent in suit showed that the process according to operative claim 1 led to an improvement in terms of the PPUP parameter.

Auxiliary requests 4 to 8 - Admittance

- (d) Claim 1 of auxiliary request 4 only differed from claim 1 of auxiliary request 4 dealt with in the contested decision in that features contained therein were amended so as to overcome the objections of lack of clarity retained by the opposition division. Since that objection was raised for the first time at the oral proceedings before the opposition division, the appellant could only overcome these objections after having been instructed by its client.

- (e) Claim 1 of auxiliary request 5 corresponded to the combination of claims 1 and 8 of auxiliary request 5 dealt with in the contested decision, whereby an amendment was made to overcome the objections pursuant Article 84 EPC and Article 123(3) EPC indicated in the decision. These amendments further aimed at overcoming the objection of lack of inventive step retained against the higher pending requests defended during the opposition proceedings.

- (f) During the oral proceedings before the Board, it was acknowledged that the arguments put forward in writing regarding the inventive step of claim 1 of any of auxiliary requests 6 to 8 had not been addressed during the opposition proceedings and that, as a consequence, the admission into the proceedings of any of these requests could necessitate that the case be remitted to the first

instance for further prosecution. No justification for the filing of these requests only at the appeal stage was provided.

XIV. The arguments of the respondent, as far as relevant to the present decision, may be summarised as follows:

Main request - Inventive step

(a) The subject-matter of claim 1 of the main request differed from the closest prior art, which was a process according to example 8 of D2, in the following features:

- a specific amount of protoanemonin and/or furfural was used;
- a specific amount of iron as defined in granted claim 1 was present in the basic composition used in the neutralisation step.

No effect related to these distinguishing features had been shown to be achieved, in particular not in the examples and comparative examples of the patent in suit. Also, the examples of the patent in suit could not be fairly compared with the ones of D2. Therefore, the technical problem effectively solved over the closest prior art resided in the provision of an alternative process for producing a polyacrylic acid (salt) water-absorbent resin having satisfying properties.

Amounts of protoanemonin and/or furfural as defined in operative claim 1 were explicitly taught in D2. Also, it was known, e.g. from D3/D3a, that polyacrylic water-absorbent resins might be

prepared under reaction conditions similar to those of example 8 of D2 but wherein the amount of iron components was controlled during the neutralisation step preceding the polymerisation reaction, in particular to avoid coloration problems.

For those reasons, the subject-matter of operative claim 1 was not inventive.

Auxiliary requests 1 to 3 - Inventive step

(b) The same arguments as outlined for the main request were valid in respect of the inventive step of claim 1 of auxiliary requests 1 and 3.

(c) Regarding the inventive step of claim 1 of auxiliary request 2, example 13 of D2, which comprised a surface crosslinking step, was the closest prior art. Regarding the parameter PPUP now indicated in operative claim 1, no effect had been shown in relation therewith. Since that parameter was taken out of the description of the patent in suit, the burden of proof, to show that that feature was not achieved in D2, was on the appellant. In the absence of any evidence in that respect, that feature could not be held to contribute to an inventive step. Under these circumstances, claim 1 of auxiliary request 2 was not inventive for the same reasons as outlined for claim 1 of the main request.

Auxiliary requests 4 to 8 - Admittance

(d) Auxiliary requests 4 and 5 could and should have been filed already during the opposition proceedings. There was no reason justifying their

filing only at the appeal stage. In particular, regarding auxiliary request 4, the objection was easy to understand and would have been easy to overcome. By not filing amended requests at the oral proceedings before the opposition division, the appellant had prevented the opposition division to take a decision on those requests. Should those requests be admitted, a remittal to the first instance would be necessary to deal with the inventive step.

(e) Should any of auxiliary requests 6 to 8 be admitted into the proceedings, new aspects which had not been addressed during the first instance proceedings would have to be dealt with for the first time in appeal, which went against the economy of the proceedings.

(f) For those reasons none of auxiliary requests 4 to 8 should be admitted to the proceedings pursuant to Article 12(4) RPBA.

XV. The appellant requested that the decision under appeal be set aside and that the opposition be dismissed (main request) or, alternatively, that the patent be maintained in amended form according to any of auxiliary requests 1, 2, 4 to 8 and 3 in that order, all requests filed with the statement of grounds of appeal.

The respondent requested in writing that the appeal be dismissed. It further requested that auxiliary requests 4 to 8 not be admitted into the proceedings.

Reasons for the Decision

Main request

1. Article 56 EPC

1.1 Closest prior art

In agreement with the opposition division's finding, both parties were of the opinion that example 8 of D2 was suitable as the closest prior art for the subject-matter of claim 1 of the main request. There is no reason for the Board to deviate from that view.

1.2 Distinguishing feature(s)

1.2.1 Example 8 of D2 deals with a process for the preparation of a crosslinked water-absorbent resin by treating the neutralised product of an acrylic acid composition including the unneutralised acrylic acid and a methoxyphenol and then preparing the monomer component from the resultant acrylic acid product, and finally polymerising the resultant monomer component in the presence of ferrous chloride (D2: paragraphs 221, referring back to paragraphs 154, 157, 220, 219, 215, 212 and 209-211).

1.2.2 The subject-matter of operative claim 1 differs from the process carried out in example 8 of D2 in that:

- a specific amount of protoanemonin and/or furfural is used (feature (ii) of operative claim 1). In that respect, according to the end of paragraph 154 and to paragraph 195 of D2, no

detectable amount of protoanemonin and/or furfural (i.e. the amount of each component was of less than 1 ppm by weight) was present in the acrylic acid used in example 8 of D2. Although the detection limit indicated in D2 (less than 1 ppm) does not exclude the presence of protoanemonin and/or furfural in an amount according to operative claim 1 (0.01 to 5 ppm by weight), it remains that it cannot be derived from D2 and from the evidence on file that feature (ii) of operative claim 1 is satisfied in example 8 of D2;

- a specific amount of iron as defined in operative claim 1 is present in the basic composition used in the neutralisation step (a) (see end of operative claim 1; no disclosure of an iron content in the basic composition used in the neutralisation step carried out in example 8 may be derived from the disclosure of paragraphs 220, 219, 215, 212, 209 and 165 of D2).

1.2.3 It is noted that the appellant argued in writing that "a distinct amount of iron is added at a distinct stage of the process". However, it may be concurred with the respondent that operative claim 1 does not impose any limitation regarding an amount of iron during the polymerisation step. Besides, the finding of the opposition division and of the respondent according to which an amount of iron comprised in the range defined in granted claim 1 was used in the polymerisation step of example 8 of D2 due to the addition of ferrous chloride (contested decision: page 12, section 9.4, second paragraph; rejoinder to the statement of grounds of appeal: page 7, middle paragraph), which had been put forward in writing, was not contested any more by the appellant during the oral proceedings before the

Board. In addition, further arguments in line with the opposition division's conclusion were also put forward in writing by the appellant (statement of grounds of appeal, page 31, last paragraph, first sentence; letter of 20 December 2018: page 13, second paragraph and page 13, fifth paragraph to page 14, third paragraph). Under these circumstances, and since the Board also agrees with the conclusion of the opposition division, the formulation of the distinguishing feature contemplated by the appellant ("a **distinct** amount of iron is added at a **distinct** stage of the process") does not reflect the differences between the subject-matter of granted claim 1 and the process according to example 8 of D2 and, as a consequence, is rejected.

1.3 Problem effectively solved

1.3.1 The appellant's argumentation put forward in writing according to which the problem to be solved resided in the provision of a process for producing a water-absorbent resin having an improved relationship between "absorption capacity" and "water soluble polymer", maintaining and improving high absorption properties, being of no odour, being uncoloured, having low amount of extractables and residual monomer and being produced with a high productivity (statement of grounds of appeal: page 17, last paragraph of section 2.4.1.4; page 13, first full paragraph), as was shown by a comparison of the examples of the patent in suit and of example 8 of D2, was not pursued at the oral proceedings before the Board. It was in particular acknowledged on that occasion that no fair comparison could be made between the examples of the patent in suit and of example 8 of D2, as indicated in the contested decision (page 12, section 9.5) and in the

Board's communication (section 8.2.2.b and c).

- 1.3.2 During the oral proceedings before the Board, the appellant rather argued that examples 1-2 and comparative examples 1-2 of the patent in suit showed that the technical problem effectively solved over the closest prior art resided in the provision of a process for producing a water-absorbent resin having lower amounts of extractables and improved coloration.

However, although examples 1-2 of the patent in suit are effectively directed to a process according to operative claim 1, comparative examples 1-2 differ therefrom only in that a different amount of iron was present in the neutralising composition (see Table 1) and not in the distinguishing features identified above, namely neither the amount of protoanemonin and/or furfural, nor the use of a specific amount of iron already at the neutralisation step, which was not contested by the appellant during the oral proceedings before the Board. Therefore, the examples and comparative examples of the patent in suit relied upon by the appellant are not suitable to show that a technical effect attributable to the above distinguishing features was indeed achieved.

- 1.3.3 Under such circumstances, it cannot be agreed that comparative examples 1-2 of the patent in suit render unnecessary a direct and fair comparison with the closest prior art illustrated by a process according to example 8 of D2, as argued by the appellant. In particular, they cannot be considered as closer to the subject-matter claimed than example 8 of D2, as it contains already the required amount of iron.

1.3.4 In view of the above, the technical problem effectively solved over example 8 of D2 resides in the provision of a further process for producing a polyacrylic acid (salt) water-absorbent resin having satisfying absorption properties, water extractable contents, residual monomer content and colour in alternative to the one of example 8 of D2 (see Table 2 of D2).

1.4 Obviousness

1.4.1 The question remains to be answered if the skilled person, desiring to solve the problem(s) identified as indicated above, would, in view of the closest prior art, possibly in combination with other prior art or with common general knowledge, have modified the disclosure of example 8 of D2 in such a way as to arrive at the claimed subject matter.

1.4.2 Regarding the amount of protoanemonin and/or furfural, it is explicitly taught in D2 that the acrylic acid composition may contain protoanemonin and/or furfural in an amount of up to 20 ppm, whereby a preferred amount is of 0.01 to 5 ppm in order not to impair the polymerisation time and the properties of the water-absorbent resin (D2: paragraph 49). Therefore, using an acrylic acid composition comprising an amount of protoanemonin and/or furfural of 0.01 to 5 ppm, as indicated in operative claim 1, constitutes an obvious modification of the process of example 8 of D2 in view of providing a mere alternative thereto.

1.4.3 Regarding the iron content of the basic composition used at the neutralisation stage, the polymerisation step of example 8 of D2 was carried out using an iron content as defined in granted claim 1 (see section 2.2.2 above), which, according to the teaching

of paragraph 79 of D2, is said to promote the polymerisation rate without increasing the amount of residual monomers and/or the water extractable contents. It was further not shown that introducing said iron content during either the neutralisation step or the polymerisation step contributed in any manner to the inventive step. Finally, it is also derivable from paragraphs 76-79 of D3/D3a that it was known in the art that polyacrylic water-absorbent resins may be prepared under reaction conditions similar to those of example 8 of D2 but wherein the iron component (in an amount apparently similar to the one used in example 8 of D2) is present during the neutralisation step preceding the polymerisation reaction.

In that respect, the appellant argued in writing that the skilled person would not consider using iron already at the neutralisation step because he would expect some coloration problems (statement of grounds of appeal: pages 16-17). Although it is correct that it appears to be derivable from D3/D3a that it was known at the priority date of the patent in suit that the amount of iron should be controlled in order to avoid coloration problems (D3a: see e.g. paragraph 35), it is the Board's view that, in view of the - low - amount of iron used in example 8 of D2 and of the technical problem effectively solved identified above (provision of satisfying coloration properties), the skilled person would not be prevented from using a basic composition comprising the iron component required for the polymerisation step of D2, in the same amount as in example 8 of D2 or in a similar amount falling in the range defined in granted claim 1. For that reason, the appellant's argument did not convince.

- 1.4.4 In view of the above, the subject-matter of operative claim 1 is not inventive and the main request is not allowable.

Auxiliary request 1

2. The subject-matter of claim 1 of auxiliary request 1 only differs from the one of claim 1 of the main request in that, according to feature (ii), both protoanemonin and furfural must be present in an amount of 0.01 to 5 ppm by weight in the acrylic acid composition.

No additional arguments were put forward by the appellant in respect of inventive step of claim 1 of auxiliary request 1 as compared to claim 1 of the main request. Therefore, there is no reason for the Board to arrive at a different conclusion as for the main request (in particular in view of the teaching of paragraph 49 of D2).

Auxiliary request 2

3. The subject-matter of claim 1 of auxiliary request 2 differs from the one of claim 1 of the main request in that,
- the process now being defined comprises additional drying and surface cross-linking steps;
 - the water absorbent resin is defined as satisfying a specific range in terms of liquid permeability under pressure (parameter PPUP of 50 to 100%).

- 3.1 Both parties considered that example 13 of D2, which comprised as compared to example 8 of D2 a further

crosslinking step, was the closest prior art. The Board has no reason to deviate from that view.

3.2 The subject-matter of operative claim 1 differs from the process carried out in example 13 of D2 in that:

- a specific amount of protoanemonin and/or furfural is used (feature (ii) of operative claim 1);
- a specific amount of iron as defined in operative claim 1 is present in the basic composition used in the neutralisation step (a);
- the water-absorbent resin must satisfy a PPUP in the range of 50-100%.

3.3 As for the main request, the first two features (protoanemonin and/or furfural; iron) were not shown to contribute to the inventive step.

3.4 Although some arguments were put forward in writing in support of inventive in relation to the amendment directed to the PPUP feature, those arguments were not pursued at the oral proceedings before the Board, whereby it was further indicated that PPUP was directly related to the amount of iron in the basic composition.

In that respect, the appellant argued in writing that the process now being claimed led to an improvement in terms of PPUP. Although that argument was not pursued at the oral proceedings, it is the Board's view that, although D2 does not disclose any information in respect of feature PPUP, it would have been the duty of the appellant to show that said feature, which had been taken up from the description of the patent specification in order to further distinguish the

subject-matter being claimed from D2, was not satisfied by the closest prior art. Under such circumstances, a fair comparison between a process as claimed with a process according to the closest prior art would have been required in support of the appellant's argumentation. In that respect, the comparison of examples 6 and 7 of the patent in suit with comparative example 5 of the patent in suit relied upon by the appellant would also not be a fair comparison because comparative example 5 was carried out using a chelating agent (see paragraphs 153 and 152: water-absorbent resin P9 obtained as in example 3; paragraph 143, line 2: use is made of a diethylenetriamine pentaacetate, which is a chelating agent according to paragraph 105-107 of the patent in suit), whereas examples 6-7 not (see paragraphs 147 and 148: water-absorbent resin P1 and P2 obtained as in examples 1-2).

Under such circumstance, the appellant's argument submitted in writing and based on the PPUP feature fails to convince.

- 3.5 In view of the above and in the absence of a fair comparison between a process as defined in operative claim 1 and the one of example 13 of D2, no effect may be held to have been shown in respect of any of the above indicated distinguishing features. Under such circumstances, in the absence of any arguments showing how the amendments made may overcome the invention step objection retained against the main request, the same conclusion as the one drawn in section 2 above for claim 1 of the main request is bound to be reached for claim 1 of auxiliary request 2.

Auxiliary requests 4 and 5

4. Admittance

4.1 The respondent requested that auxiliary requests 4 and 5 be not admitted into the proceedings pursuant to Article 12(4) RPBA.

4.2 Operative auxiliary request 4 is based on auxiliary request 4 dealt with in the contested decision, whereby the feature related to the iron content was amended in order to indicate that it is directed to trivalent iron. The appellant argued that said amendment was based on page 26, lines 18-20 of the application as filed.

4.2.1 The amendment was made in order to overcome the objection of lack of clarity of that feature retained by the opposition division (section 10 of the contested decision). However, the amendment made in operative auxiliary request 4 is based on the passage of the description of the application as filed corresponding to the support already relied upon by the appellant during the opposition proceedings (see section 10.6 of the minutes of the oral proceedings before the opposition division: paragraph 55 of the patent in suit corresponds to page 26, lines 6-21 of the application as filed). Therefore, should the appellant have desired to defend claims corresponding to operative auxiliary request 4, he could, and actually he should, have done so during the oral proceedings before the opposition division. In the present case, there is no evidence on file justifying such a late filing of auxiliary request 4.

4.2.2 The appellant argued that the objection of lack of clarity against auxiliary request 4 defended during the opposition proceedings was first submitted at the oral proceedings before the opposition division, so that they could only overcome the objection after having contacted the client. However, it is evident, in the Board's view, that the wording of the claims defended in opposition was unclear and the amendment proposed now is self-evident as well, in particular in view of the corresponding passage of the application as filed relied upon by the appellant itself. It was not shown that there was any need to have the client's opinion in that respect. Therefore, the appellant's argument is rejected.

4.2.3 It is further noted that the argumentation of the appellant in respect of inventive step contemplated in respect of auxiliary request 4 is directed to an issue which was not dealt with in the contested decision (nature of the iron cation), in respect of any of the then pending requests. Therefore, admitting auxiliary request 4 into the proceedings may have required that the case be remitted to the first instance for further prosecution, which could have been avoided if operative auxiliary request 4 had been filed in the first instance proceedings. It was indeed the deliberate choice of the appellant which prevented the opposition division from deciding on inventive step on a properly formulated request.

4.2.4 For those reasons, the Board makes use of its power pursuant to Article 12(4) RPBA to hold auxiliary request 4 inadmissible.

4.3 Operative auxiliary request 5 is based on auxiliary request 5 dealt with in the contested decision,

whereby, among others, the feature in brackets "(Fe₂O₃)" related to the iron content, which had been objected to for lack of clarity and under Article 123(3) EPC in the contested decision, was deleted (section 11).

- 4.3.1 By carrying out that straightforward amendment at the appeal stage only (according to section 10.10 of the minutes of the oral proceedings before the opposition division, the appellant refrained from making any comments to those objections), the appellant *de facto* prevented the opposition division to take any decision related on substantive issues in respect of auxiliary request 5. Under such circumstances, it is the Board view that the appellant could and in fact should have submitted present auxiliary request 5 already during the first instance proceedings, if he wanted to defend the patent with such a limitation.
- 4.3.2 In addition, for the same reasons as indicated in section 4.2.3 above, admitting auxiliary request 5 into the proceedings may have required that the case be remitted to the first instance for further prosecution e.g. to assess the inventive step in view of an issue which was not dealt with in the contested decision (nature of the iron cation) in view of a deliberate choice of the appellant.
- 4.3.3 For those reasons, the Board makes use of its power pursuant to Article 12(4) RPBA to hold auxiliary request 5 inadmissible.

Auxiliary requests 6 to 8

5. Admittance

5.1 The respondent requested that auxiliary requests 6 to 8 be not admitted into the proceedings pursuant to Article 12(4) RPBA.

5.2 These requests are all new requests which were not defended during the opposition proceedings. However, it was not shown that there were any reasons why these requests could not have been submitted at the opposition stage. In particular, it was neither shown nor even argued that the late filing of these requests at the appeal stage only was justified in view of a new and surprising development of the case.

5.3 It is further noted that the argumentation of the appellant in respect of inventive step contemplated in respect of auxiliary requests 6 to 8 is directed to an issue which was not dealt with in the contested decision in respect of any of the then pending requests, namely the use of a polyvalent carboxylic acid and its salt, i.e. a chelating agent according to paragraph 105 of the patent in suit. Therefore, admitting any of auxiliary requests 6 to 8 into the proceedings may have required that the case be remitted to the first instance for further prosecution, which could have been avoided if these auxiliary requests had been filed in the first instance proceedings. Also in this case it was the deliberate choice of the appellant that prevented the opposition division from deciding on the possible contribution to inventive step of such a limitation only introduced at the appeal stage.

- 5.4 For these reasons, the Board makes use of its power pursuant to Article 12(4) RPBA to hold each of auxiliary requests 6 to 8 inadmissible.

Auxiliary request 3

6. Claim 1 of auxiliary request 3 differs from claim 1 of the main request in that the range for the amount of protoanemonin and/or furfural was modified from "0.01 to 5 ppm by weight" to "1 to 5 ppm by weight" and in the definition of the iron amount in the basic composition.

In the absence of any arguments why these amendments may overcome the objection of lack of inventive step retained against the main request, auxiliary request 3 is bound to share the same fate as the main request, for the reasons outlined in section 1.3 above.

7. Considering that neither the main request, nor any of auxiliary requests 1 to 3 is inventive and that none of auxiliary requests 4 to 8 are admitted into the proceedings, there is no need for the Board to deal with any other issues in dispute between the parties and the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



B. ter Heijden

D. Semino

Decision electronically authenticated