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Datasheet for the decision of 4 September 2009

Case Number: T 0323/07 - 3.3.03

Application Number: 99301647.6

Publication Number: 0942015

IPC: C08F 20/06

Language of the proceedings: EN

Title of invention:
(Meth)acrylic acid polymer and manufacturing method thereof

Patentee:
NIPPON SHOKUBAI CO., LTD.

Opponents:
BASF SE
The Procter & Gamble Company
Rohm and Haas Company

Headword:
-

Relevant legal provisions:
EPC Art. 123(2), 83, 56
RPBA R. 13(3)

Relevant legal provisions (EPC 1973):
-

Keyword:
"Disclosure - sufficiency - (no) (main request)"
"Amendments - added subject-matter (yes) (sixth auxiliary request)"
"Auxiliary request 6a - not admitted"
"Inventive step - (no) (ninth auxiliary request)"

Decisions cited:
T 0172/99

Catchword:
-

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Case Number: T 0323/07 **-** 3.3.03

D E C I S I O N
of the Technical Board of Appeal 3.3.03
of 4 September 2009

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Decision under appeal: **Decision of the Opposition Division of the European Patent Office dated 4 December 2006 and posted 20 December 2006 revoking European patent No. 0942015 pursuant to Article 102(1) EPC 1973.**

Composition of the Board:

Chairman: R. Young
Members: W. Sieber
C. Vallet

Summary of Facts and Submissions

I. The mention of the grant of European patent No. 0 942 015, in respect of European patent application No. 99301647.6, in the name of Nippon Shokubai Co., Ltd., filed on 4 March 1999 and claiming priorities from JP 5549098 (6 March 1998), JP 21932698 (3 August 1998) and JP 22600698 (10 August 1998), was published on 12 May 2004 (Bulletin 2004/20). The granted patent contained 11 claims, whereby Claims 1, 5 and 7 read as follows:

"1. A polymer composition characterized by:

being a (meth)acrylic acid polymer obtained by polymerizing, in an aqueous solution, 50-100 mol% of (meth)acrylic acid, and 0-50 mol% of a water-soluble monoethylenic unsaturated monomer copolymerizible with said (meth)acrylic acid when needed, said (meth)acrylic acid polymer having a sulfonic acid group at an end terminal, and an anti-gelling ability Q-value smaller than 2.0, where said anti-gelling ability Q-value is defined as:

$$Q = \frac{\text{degree of gelling} \times 10^5}{\text{weight average molecular weight}}$$

and/or containing an (acrylic acid/acrylate - maleic acid/maleate) copolymer having a clay dispersing ability in high hard water of 50% or greater and a calcium ion trapping ability of 270 mg $CaCO_3$/g or greater.

5. A manufacturing method of a (meth)acrylic acid polymer, wherein 60 mol% or more of a hydrophilic monomer containing 50 mol% or more of (meth)acryic acid is used, and a pH and a degree of neutralization when conducting a polymerization reaction of said monomer is smaller than 5 and smaller than 40 mol%, respectively, said method being characterized by adopting at least one condition selected from the following:

(1) a combination of at least one kind of persulfate salts and at least one kind of bisulfite salts is used as an initiator series, and

(2) a solid concentration when a polymerization reaction ends is 40% or higher, and a weight average molecular weight of a resulting polymer is in a range between 3,000 and 15,000.

7. A method of manufacturing an (acrylic acid/acrylate-maleic acid/maleate) copolymer by polymerizing, in an aqueous solvent, a monomer component mainly containing acrylic acid/acrylate and maleic acid/maleate in the presence of at least a polymerization initiator, characterized in that:

said monomer component, said polymerization initiator, said aqueous solvent, and other raw materials used when needed are used in amounts such that a theoretical solid concentration of a resulting polymer is 40 wt% or higher;

a mole ratio of used amounts of said acrylic acid/acrylate to said maleic acid/maleate is 95-80/5-20; and (1) a combination of persulfate

salts and bisulfite salts and/or (2) a combination of hydrogen peroxide and polyvalent metal ions are used as said polymerization initiator."

II. Notices of opposition were filed on 11 February 2005 by BASF AG (now BASF SE; opponent 01) and The Procter & Gamble Company (opponent 02) and on 12 February 2005 by the Rohm and Haas Company (opponent 03). All opponents invoked the grounds of opposition pursuant to Article 100(a) EPC (lack of novelty, lack of inventive step) and Article 100(b) EPC (lack of sufficiency).

The following document was - *inter alia* - cited in support of the oppositions:

D2: EP 0 676 422 A1.

III. By a decision which was announced orally on 4 December 2006 and issued in writing on 20 December 2006, the opposition division revoked the patent, because none of the requests filed during the opposition procedure, namely a main request and auxiliary requests 1-5, met the requirements of the EPC.

(a) As regards the 4th auxiliary request, the opposition division held that the subject-matter of Claim 1 of this request (identical with Claim 1 as granted; point I, above) did not comply with the requirements of Article 83 EPC. *Inter alia*, the opposition division did not accept that the measurement of the anti-gelling parameter Q of the polymer be enabled, since neither the temperature nor the time delay of the measurement were specified in the patent in suit. The relevance of

these measuring conditions had been demonstrated by the experimental report submitted by opponent 01 with the notice of opposition. Further, reference was also made to T 172/99.

(b) As regards the 5th auxiliary request, the opposition division found that the subject-matter of Claim 1 of this request was not based on an inventive step over D2 which was considered to be the closest prior art.

Claim 1 of the 5th auxiliary request corresponded to Claim 7 as granted (point I, above) with the exception that alternative (2) as a polymerisation initiator had been deleted and at the end of the claim the feature "…; and a degree of neutralization of the maleic acid is 5-30 mol%" had been added.

IV. On 20 February 2007 the appellant (proprietor) lodged an appeal against the decision of the opposition division with simultaneous payment of the prescribed fee.

A statement setting out the grounds of appeal and including a new claim set was filed on 20 April 2007. The arguments of the appellant, as far as they are relevant for this decision, may be summarized as follows:

It was unjustified to assert that the determination of the parameters of Claim 1 as granted (identical with Claim 1 of the 4th auxiliary request before the opposition division and with Claim 1 filed with the

statement of grounds of appeal) had not been sufficiently disclosed. To overcome the objection against the measurement of parameter Q, the appellant reworked Example 1 of the patent in suit and measured the Q-value for three distinct temperature conditions, namely 90°C, 80°C and 70°C, at a normal elapse time (Table A in the statement of grounds of appeal). As could be seen from Table A, the Q-value was always smaller than 2.0 for any given polymer according to Claim 1 and it was evidently not dependent on the temperature within a range of 70-90°C when measured in accordance with the description of the patent specification. It was not clear why opponent 01 had obtained different results.

Further, the subject-matter of Claim 7 of the set of claims submitted with the statement of grounds of appeal (identical with Claim 1 of the 5th auxiliary request before the opposition division, point III(b), above) was not obvious from D2. In order to prove the importance of the maleic acid neutralization degree of 5-30 mol%, the appellant had reworked Examples 1 and 2 (degree of neutralization of the maleic acid was 25 and 12.5 mol%, respectively) and Comparative Example 1 (0 mol%) of the patent in suit. As could be seen from Table C, the handling of the polymer reaction in Additional Comparative Example 1 was unproblematic and comparable with Additional Examples 1 and 2. However, the clay dispersing ability was less than 50% which was not desirable for a polymer according to the patent in suit.

V. In a letter dated 24 September 2007 respondent 03 (opponent 03) requested that the appeal be dismissed.

The arguments relevant to this decision may be summarized as follows:

Respondent 03 concurred with the opposition division that parameter Q was not sufficiently disclosed to reliably define the claimed subject-matter. All the relevant information with regard to the measurement of Q had not been provided in the patent in suit, as was evidenced by the fact that the appellant and opponent 01 obtained significantly different results in their repeat of the worked examples of the patent in suit, although both parties had asserted that they had run their experiments in accordance with the disclosure of the patent in suit. In addition, the parameter Q could not be reliably determined, because the accuracy of the measurement was insufficient.

As regards Claim 7 of the claim set submitted with the statement of grounds of appeal (identical with Claim 1 of the 5th request before the opposition division), this claim lacked novelty and/or inventive step over D2. In this regard, attention was drawn to Dr Baxter's declaration, submitted by respondent 03 with its letter of 22 November 2006 in the opposition proceedings. It was evident from Dr Baxter's declaration that the subject-matter of Claim 7 was anticipated by D2. The appellant was simply using a different terminology in Claim 7 ("neutralization of the maleic acid is 5-30 mol%") to define the same technical contribution disclosed in D2, page 4, lines 29-37.

VI. In a letter dated 2 July 2009 respondent 02 (opponent 02) indicated that it would not attend the

oral proceedings scheduled for 25 August 2009 (eventually postponed to 4 September 2009).

VII. With a letter dated 4 August 2009 the appellant submitted amended claims according to a main request and first to ninth auxiliary requests. Arguments with respect to the patentability of the amended claims were advanced, in particular with respect to issues of Article 83 and Article 56 EPC.

VIII. In a communication dated 11 August 2009 the board raised objections against the numbering in some of the of the claim sets filed on 4 August 2009.

IX. In response the appellant submitted with a letter dated 13 August 2009 a main request and first to ninth auxiliary requests.

X. With a letter dated 28 August 2009, respondent 03 filed a copy of FR 2 590 261, a document cited in the European Search Report of the patent in suit and allegedly being highly pertinent, at least for novelty purposes.

It was also pointed out that the appellant had failed to identify where in the application as filed basis for the amendments in various auxiliary requests could be found. Further, the appellant had failed to identify a reason for some of the amendments made in the claims of some of the auxiliary requests. Indeed, at least some of the claims of the first, second, third, fourth, fifth and sixth auxiliary requests did not appear to be in compliance with Rule 80 EPC.

XI. Respondent 01 (opponent 01) did not file any written submissions.

XII. On 4 September 2009 oral proceedings were held before the board where respondent 02, as announced, was not represented. Since, however, it had been duly summoned, the oral proceedings were continued in its absence in accordance with Rule 115(2) EPC and Article 15(3) RPBA (OJ EPO 2007, 536).

(a) The appellant indicated that it wanted to pursue the claim sets filed with the letter dated 13 August 2009.

Respondent 03 requested that these claim sets not be admitted into the proceedings, because they were filed late. Further, the filing of so many request of such a complexity was a deliberate attempt of the appellant to make life difficult for the respondents.

(b) Main request

The main request filed with the letter dated 13 August 2009 contained 10 claims whereby Claim 1 corresponded to granted Claim 1 (point I, above).

The discussion focussed on the question as to whether or not the patent in suit contained sufficient information to reliably measure parameter Q. The appellant admitted that Q had not been described in the prior art before, but the patent in suit contained a clear guidance for the skilled person how that parameter had to be

measured. Respondent 03 basically relied on its written submissions. Respondent 02 pointed out that the patent in suit was silent about the actual measuring temperature. Further, there was no information as to whether or not the measuring cell was heated or as to what had to be considered as a normal elapsed time.

(c) The appellant withdrew the first to fifth auxiliary requests filed with the letter dated 13 August 2009. Claim 1 of each of these requests contained a reference to the parameter Q.

(d) Sixth auxiliary request

The sixth auxiliary request filed with the letter dated 13 August 2009 contained six claims whereby Claim 1 corresponded to Claim 5 as granted (point I, above), and dependent Claims 3 and 4 read as follows:

"3. The manufacturing method of a (meth)acrylic acid polymer of Claim 1 or 2, wherein 100 mol% of (meth)acrylic acid is used to form a homopolymer of (meth)acrylic acid.

4. The manufacturing method of a (meth)acrylic acid polymer of any one of Claims 1-3, said method being characterized by adopting both of the conditions (1) and (2)."

Respondent 03 pointed out that the subject-matter of Claims 3 and 4 of the sixth auxiliary request had no basis in the application as filed

(Article 123(2) EPC). Furthermore, the filing of these new dependent claims was not in compliance with Rule 80 EPC. Respondent 02 concurred with the submissions of Respondent 03. The appellant was of the opinion that the subject-matter of Claims 3 and 4 had a fair basis in the application as filed. The purpose of the filing of new dependent claims was to improve the appellant's position in contingent national proceedings. This practice was, according to the appellant, not prohibited by Rule 80 EPC.

(e) The appellant withdrew the seventh and eighth auxiliary requests filed with the letter dated 13 August 2009.

(f) Auxiliary request 6a

The appellant submitted an auxiliary request 6a and requested its admission into the proceedings. The only claim of this request read as follows:

"A manufacturing method of a (meth)acrylic acid polymer, wherein 60 mol% or more of a hydrophilic monomer containing 50 mol% or more of (meth)acryic acid is used, and a pH and a degree of neutralization when conducting a polymerization reaction of said monomer is smaller than 5 and smaller than 40 mol%, respectively, said method being characterized by adopting both conditions selected from the following:

(1) a combination of at least one kind of persulfate salts and at least one kind of

bisulfite salts is used as an initiator series, and

(2) a solid concentration when a polymerization reaction ends is 40% or higher, and a weight average molecular weight of a resulting polymer is in a range between 3,000 and 15,000,

wherein:
a weight ratio of said bisulfite salts to said persulfate salts in said combination is in a range between 0.5 and 5 to 1; and
a total amount of said persulfate salts and said bisulfite salts added to a polymerization reaction series is in a range between 2 and 20 g per 1 mole of said monomer and wherein the reaction temperature is 90°C or higher".

Respondent 03 and Respondent 02 objected against the admission of auxiliary request 6a into the proceedings, in particular because the claim of this requests now contained a feature from the description. This turn of events could not have been anticipated by the respondents.

(g) Ninth auxiliary request

The ninth auxiliary request filed with the letter dated 13 August 2009 contained two claims whereby Claim 1 corresponded to Claim 1 of the 5th auxiliary request before the opposition division (point III(b), above).

Respondents 02 and 03 raised no novelty objection against the subject-matter of Claim 1 of the ninth auxiliary request. However, they argued that the claimed subject-matter was not based on an inventive step over D2 which was considered to represent the closest prior art. In this context, reference was made to Dr Baxter's declaration filed by respondent 03 during the opposition procedure.

The appellant stated that the polymers produced by the claimed process had superior properties. The board pointed out that the appellant's own experiments filed with the statement of grounds of appeal, in particular Table C, did not support this line of argumentation.

XIII. The appellant requested that the decision under appeal be set aside and the patent be maintained in amended form on the basis of one of the following requests:

- main request (Claims 1-10) filed with the letter dated 13 August 2009, or
  sixth auxiliary request (Claims 1-6) filed with the letter dated 13 August 2009, or
- auxiliary request 6a (Claim 1) filed at the oral proceedings, or
- ninth auxiliary request (Claims 1-2) filed with the letter dated 13 August 2009.

XIV. Respondents 01 and 03 requested that the appeal be dismissed.

Respondent 02 did not file any request.

Reasons for the Decision

1. The appeal is admissible.

2. *Procedural matter (admissibility of main request, sixth auxiliary request, ninth auxiliary request)*

2.1 The appellant filed a main request as well as first to ninth auxiliary requests with the letter dated 4 August 2009. Following a formal objection of the board against the claim numbering in some of these requests, the appellant filed its eventually valid main request and first to ninth auxiliary requests with the letter dated 13 August 2009. Apart from a renumbering of the claims, where necessary, these requests corresponded to the requests filed on 4 August 2009. Thus, ultimately, the parties got to know the appellant's strategy one month before the oral proceedings.

2.2 Respondent 03 contended at the oral proceedings before the board that these requests should not be admitted into the proceedings because the appellant had not presented its full case with the statement of grounds of appeal, and the filing of so many requests of such complexity at such a late stage took the respondent by surprise and required an undue lot of care to scrutinize the new requests.

According to Articles 13(1) and (3) of the Rules of Procedure of the Boards of Appeal of the EPO (OJ EPO 2007, 536), "(1) Any amendment to a party's case after it has filed its grounds of appeal or reply may be

admitted and considered at the Board's discretion.
(3) Amendments sought to be made after oral proceedings have been arranged shall not be admitted if they raise issues with the Board or the other party of parties cannot reasonably be expected to deal with without adjournment of the oral proceedings."

In the present case, the claims of the main request correspond to the claims of the request filed by the appellant with the statement of grounds of appeal except that Claim 5 contains no amendment any more but again corresponds to Claim 5 as granted. Thus, it is at least questionable as to whether or not the main request is an amendment to the appellant's case at all. As regards the auxiliary requests, they contain further restrictions primarily based on independent granted claims or alternatives disclosed therein, respectively, and they are structured to deal with various objections raised during the proceedings. Hence, the main request and the first to ninth auxiliary requests could neither occasion surprise to the other parties nor any unreasonable difficulty of understanding. Consequently, Article 13(3) of the RPBA of the EPO does not constitute a bar to the admissibility of the new requests.

2.3 In view of the above, the board exercises its discretion to admit the main request, the sixth and ninth auxiliary requests into the proceedings (Article 13(1) RPBA of the EPO).

It may be appropriate to recall at this juncture that the first to fifth, seventh and eighth auxiliary requests have been withdrawn at the oral proceedings

before the board so that there is no need to decide on the admissibility of these requests.

3. *Main request*

3.1 Amendments

The claims according to the main request correspond to the granted claims with the exception that in Claim 7 alternative (2) as a polymerisation initiator has been deleted (ie the combination of hydrogen peroxide and polyvalent metal ions) and that at the end of Claim 7 the feature "…; and a degree of neutralization of the maleic acid is 5-30 mol%" has been added. Furthermore, in view of the deletion of alternative (2), dependent granted Claim 9 has been deleted and granted Claims 10 and 11 have been renumbered accordingly including an amendment of the back reference in new Claim 10.

The introduction of the new feature into Claim 7 is based on page 44, lines 10-14 of the application as filed (paragraph [100] of the patent specification). Since the further amendment in Claim 7 is merely a deletion of an alternative, no objection under Article 123(2) and (3) EPC arises against the claims of the main request. Nor was any objection raised by the respondents in this respect.

3.2 Sufficiency

3.2.1 Claim 1 of the main request which is identical with Claim 1 as granted (point I, above) requires that the (meth)acrylic polymer has an anti-gelling ability Q-value smaller than 2.0. The Q-value is calculated

according to the formula given in Claim 1 using the degree of gelling.

According to the decision under appeal, the information in the patent in suit with regard to the parameter Q which was new and unfamiliar was not sufficient reliably to define the subject-matter of Claim 1 as granted. Reference was made in this context to T 172/99 of 7 March 2002 (not published in the OJ EPO). Opponent 01 had demonstrated by reworking Examples 1 and 17 of the patent in suit (experimental report filed with the opposition brief dated 11 February 2005) that the Q-value was dependent upon the time delay and the temperature at which the measurement of the degree of gelling was carried out. In fact, opponent 01 obtained for Examples 1 and 17 values for Q below 2.0 only after a certain delay and at lower temperatures (table on page 2 of the experimental report). The patent specification did not identify the time and the temperature of the actual measurement.

3.2.2 The appellant argued that the measurement of the Q-value and the degree of gelling, respectively, was clearly set out in the patent in suit. Thus, the degree of gelling was measured on a sample that was allowed to stand for one hour in a thermostatic bath set at 90°C (paragraphs [0124]-[0127] of the patent in suit). In addition, paragraph [0028] indicated that "the resistance of gelling is measured with hot water of 90°C". Measurement at higher temperature was important because the polymer composition was used as an additive (builder) for washing (detergent) composition. These properties were required, since washing was usually carried out at elevated temperatures of "50°C or higher

in Europe" (paragraph [0028] of the patent in suit). Since there was no time delay indicated for cooling down the sample, a skilled person would undoubtedly understand that the measurement had to be carried out directly after incubation. Therefore, the sample temperature would not significantly decrease before the sample was measured.

In order to demonstrate that the Q-value was not dependent on the temperature within a range of 70-90°C the appellant reworked Example 1 of the patent in suit and measured the Q-value for three distinct temperature conditions: 90°C, 80°C and 70°C, at a normal elapsed time (Table A: 1.09, 1.09 and 1.02).

3.2.3 It is conspicuous to the board that the patent in suit does not in fact indicate at which temperature the degree of gelling is measured. It is only derivable from paragraph [0126] of the patent in suit that the sample is kept in a thermostatic bath set at 90°C for one hour **before** the actual measurement. In that paragraph it is stated that "**After** (emphasis added by the board) an hour has passed, the sample liquid is placed into a quartz cell of 5 cm across, and a light absorbancy [sic] (a) at a UV wavelength of 380 nm is measured." The same applies to the passage in paragraph [0028] relied upon by the appellant where it is stated that "For this reason, the resistance of gelling is measured with hot water of 90°C." This statement does not indicate **at** which temperature the degree of gelling was actually measured.

Furthermore, there is no indication in the patent in suit that the quartz cell itself is heated to 90°C.

Thus, even when the measurement is carried out directly after incubation, the hot sample liquid has to be transferred to the quartz cell, eg by a pipette. During this process, the temperature of the sample liquid will inevitably drop. In fact, the longer the transfer process lasts, the greater will be the decrease in temperature. Thus, the elapsed time until the actual measurement will take place will eventually be decisive for the actual measuring temperature. The patent specification neither specifies the actual measuring temperature nor the elapsed time. On the face of it, the appellant's argument that the sample temperature would not significantly decrease before the sample is measured is not convincing.

Also the appellant’s argument that the Q-value was not dependent on the temperature within the range of 70-90°C does not stand close examination. The data provided by the appellant with the statement of grounds of appeal show that the Q-value at 70°C has in fact dropped by more than 6% compared to the Q-value of the same sample measured at 90°C. Although the appellant measured different absolute Q-values when reworking Example 1 than respondent 01 in their experiments (none of the parties could explain these differences), the appellant’s experiments nevertheless show the same trend as the experiments of respondent 01, namely that the Q-value will in fact decrease with decreasing temperature.

3.2.4 In summary, the arguments and evidence provided by the appellant are not suitable to challenge the finding of the opposition division that the subject-matter of Claim 1, in particular the parameter Q, lacks

sufficiency of disclosure. Consequently, the appellant's main request is refused.

4. It may be appropriate to recall at this point that the first to fifth auxiliary requests have been withdrawn at the oral proceedings before the board.

5. *Sixth auxiliary request*

5.1 The sixth auxiliary request consists of six claims, whereby Claim 1 corresponds to Claim 5 as granted (point I, above). Claims 3 and 4 are new dependent claims which read as follows:

"3. The manufacturing method of a (meth)acrylic acid polymer of Claim 1 or 2, wherein 100 mol% of (meth)acrylic acid is used to form a homopolymer of (meth)acrylic acid.

4. The manufacturing method of a (meth)acrylic acid polymer of any one of Claims 1-3, said method being characterized by adopting both of the conditions (1) and (2)."

5.2 Claim 4 refers - ***inter alia*** - back to Claim 3 and thus encompasses a manufacturing method specifying the production of a (meth)acrylic acid homopolymer and requiring the method to comply with both conditions (1) and (2) set out in Claim 1 of the sixth auxiliary request.

As pointed out by respondent 03 at the oral proceedings before the board, there is no basis in the application as filed for this combination of features. It may well

be that, as argued by the appellant, each individual feature has a basis in the application as filed, namely in the passages on page 16 of the application as filed (the production of a (meth)acrylic acid homopolymer) and in Claim 5 as granted and Claim 5 as originally filed, respectively, which implicitly covers the binding use of both conditions ("at least one" of conditions (1) and (2)). However, the content of the application as originally filed must not be treated as something in the nature of a reservoir from which it would be permissible to combine different individual features pertaining to preferred embodiments in order to create artificially a particular new embodiment, unless the application as originally filed itself suggests such a combination of features. In the present case, however, the combination of features as now claimed in Claim 4 is neither explicitly nor implicitly suggested by the application as originally filed. Therefore, Claim 4 of the sixth auxiliary request contravenes Article 123(2) EPC. Consequently, for this reason alone, the sixth auxiliary request has to be refused.

5.3 Furthermore, it is conspicuous to the board that dependent Claims 3 and 4 have no counterpart in the claims as granted.

Rule 80 EPC states that "Without prejudice to Rule 138, the description, claims and drawings may be amended, provided that the amendments are occasioned by a ground for opposition under Article 100, even if that ground has not been invoked by the opponent." It is in principle not conceivable which ground of opposition could be overcome by filing new dependent claims. The

purpose of Rule 80 EPC is certainly not to tidy up the claims in order to improve the proprietor's position in contingent national proceedings. Hence, Claims 3 and 4 of the sixth auxiliary request contravene Rule 80 EPC, which constitutes another reason why the sixth auxiliary request has to be refused.

6. *Auxiliary request 6a*

The board was confronted at the oral proceedings with the filing of a further request, namely auxiliary request 6a. The appellant explained that the reason for filing the new request at such a late state was to overcome the issues discussed so far at the oral proceedings.

It is conspicuous to the board that the only claim of auxiliary request 6a (point XII(f), above) has been amended to incorporate a feature from the description, ie a reaction temperature of 90°C or higher which is disclosed on page 25 of the application as filed. In the board's view, the respondents could not have anticipated this turn of events. Thus, the admission of a claim including a new feature from the description at such a late stage of the appeal proceedings would not only jeopardize the procedural fairness towards the respondents, it would also raise issues which the board or the other parties could not reasonably be expected to deal with without adjournment of the oral proceedings. Thus, the board exercised its discretion not to admit auxiliary request 6a into the proceedings (Article 13(3) RPBA).

7. It may be appropriate to recall at this point that the seventh and eighth auxiliary requests have been withdrawn at the oral proceedings before the board.

8. *Ninth auxiliary request*

8.1 Amendments

The ninth auxiliary request consists of two claims. Claim 1 corresponds to Claim 7 of the main request which, as explained in Point 3.1, above, meets the requirements of Article 123(2) and (3) EPC. Dependent Claim 2 corresponds to Claim 8 of the main request and Claim 8 as granted, respectively.

Thus no objection under Article 123 EPC arises against the claims of the ninth auxiliary request. Nor was any objection raised by the respondents in this respect.

8.2 The respondents did not raise an objection with regard to sufficiency or novelty against the method of manufacturing an (acrylic acid/acrylate -maleic acid/maleate) copolymer as defined in Claim 1 of the ninth auxiliary request. Nor does the board see a reason to raise an objection of its own in this context. Thus, the issue to be decided regarding the ninth auxiliary request is inventive step.

8.3 Inventive step

8.3.1 Claim 1 of the ninth auxiliary request relates to a manufacturing method of an (acrylic acid/acrylate - maleic acid/maleate) copolymer characterised in that a theoretical solid concentration of a resulting polymer

is 40 wt% or higher, a mole ratio of the aforesaid monomers is 95-80/5-20, a combination of persulfate salts and bisulfite salts is used as initiator, and a degree of neutralisation of the maleic acid is 5-30 mol%.

8.3.2 D2 discloses the preparation of water soluble, low molecular weight copolymers formed from 3-50 wt% of at least one monoethylenically unsaturated dicarboxylic acid monomer and from 50-97 wt% of at least one water soluble monoethylenically unsaturated monocarboxylic acid monomer (abstract). The copolymers are disclosed to be useful in cleaning and detergent formulations and water circulating systems (page 6, lines 51-55, page 7, line 52 to page 8, line 1).

Examples 1, 3, and 9 of D2 each disclose the preparation of an (acrylic acid/acrylate - maleic acid/maleate) copolymer according to the method of Claim 1 of the ninth auxiliary request except that the polymer is not neutralized. Thus, the degree of neutralization of maleic acid in these examples is calculated as 0 mol% (see eg Table 3 in the notice of opposition of opponent 01/respondent 01). In contrast, Claim 1 of the ninth auxiliary request requires that the degree of neutralization of the maleic acid is 5-30 mol%.

As is apparent from the above analysis of D2, this document discloses technical features and intended use most similar to the claimed process. Consequently, the board considers D2, and in particular Examples 1, 3 and 9 thereof, in line with the parties, to represent the closest prior art.

8.3.3 In the next step of the problem and solution approach the objective technical problem has to be formulated based on the technical effect(s) that the claimed subject-matter provides over the closest prior art.

The appellant alleged that the claimed process led to copolymers with improved properties, in particular improved clay dispersing ability in hard water - a desired basic ability of a copolymer when used as a detergent builder (paragraph [0015] of the patent specification). In order to document this alleged advantage, the appellant reworked Examples 1 and 2 of the patent in suit (Additional Examples 1 and 2) wherein the degree of neutralization of the maleic acid was 25 and 12,5 mol%, respectively, as indicated in Table C in the statement of grounds of appeal (point IV, above). Additionally, the appellant reworked Comparative Example 1 of the patent in suit (Additional Comparative Example 1) where no neutralization was performed (0 mol%). The latter therefore represents a process according to the closest prior art. Although the data in Table C admittedly show a slightly better clay dispersing ability in hard water for Additional Examples 1 and 2, it is conspicuous to the board that the polymer prepared in Additional Comparative Example 1 differs not only in the degree of neutralization from the polymers prepared in Additional Examples 1 and 2 but also in the molecular weight. In particular, the polymers of Additional Examples 1 and 2 have a molecular weight of 13,000 whereas the polymer of Additional Comparative Example 1 has a molecular weight of only 5,200. Consequently, the appellant's additional data cannot plausibly demonstrate that the

alleged advantage is due to the degree of neutralization, because the advantage may also be due to the different molecular weight.

Since there is no convincing evidence on file that the claimed process provides any technical effect and/or advantage over the process of the closest prior art, the objective technical problem can only be seen in the provision of an alternative to the process of the closest prior art.

8.3.4 It remains to be decided whether the suggested solution (amending the degree of neutralization of the maleic acid to 5-30 mol% in the process of the closest prior art) is obvious.

D2 discloses at page 4, 6th full paragraph, that "*In the process of the present invention, the reaction should be maintained at a pH of about 3 or less, more preferably at a pH of about 2 or less, and most preferably at a pH of 1.8 or less. In the most preferred embodiment of the process of the present invention, the monomers containing carboxylic acid moieties are not neutralized with a common base, such as for example sodium hydroxide, prior to being added into the reactor; and no neutralizer is added into the reactor over the reaction time*". This statement describes the process of Examples 1, 3 or 9 of D2 where no neutralization is carried out (degree of neutralization 0 mol%). However, the immediately following sentences in the same paragraph at page 4 extend the teaching of D2, namely in the direction that a partial neutralization is possible: "*However, it is possible to add partially neutralized carboxylic acid*

monomers, or to add a neutralizer into the reactor as long as the pH of the reaction mixture is maintained at a pH of about 3 or less. Possible neutralizers include common bases, for example ammonium hydroxide, or an alkali metal base such as sodium hydroxide, potassium hydroxide, or lithium hydroxide."

Hence, a person skilled in the art starting from the process disclosed in Examples 1, 3 or 9 of D2 as the closest prior art and faced with the problem of providing an alternative to this process, would immediately seize the suggestion of page 4 of D2, namely a partial neutralization. In other words, D2 itself provides a simple and straightforward option a person skilled in the art would take in order to come to an alternative process. Consequently, the process of Claim 1 of the ninth auxiliary request lacks an inventive step over D2 alone (Article 56 EPC).

8.3.5 The finding that the solution to the objective technical problem is obvious from the teaching of D2 itself is corroborated by the declaration of Dr Steven M. Baxter submitted by respondent 03 with the letter dated 22 November 2006 in the opposition proceedings. It is evident from Dr Baxter's declaration, especially from paragraphs 6-9, that the appellant is simply using a different terminology in Claim 1 of the ninth auxiliary request (neutralization of the maleic acid is 5-30 mol%) to define the same technical contribution disclosed in D2, page 4, lines 32-39. In particular, it would be evident to the person skilled in the art (taking into account its common general knowledge of the chemical nature of maleic acid, eg pKa) that to maintain a maleic acid copolymerization reaction

mixture at a pH of about 3 or less corresponds to a degree of neutralization of the maleic acid of no more than 40 mol%, and to maintain the maleic acid copolymerization reaction mixture at the more preferred pH of about 2 or less corresponds to a degree of neutralization of the maleic acid of no more than about 30 mol%.

9. In summary, none of the requests pursued by the appellant and admitted into the appeal proceedings meets the requirements of the EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

E. Görgmaier R. Young