BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

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D E C I S I O N
of 4 January 1996

Case Number: T 0583/93 - 3.3.3

Application Number: 85308398.8

Publication Number: 0183466

IPC: C08F 2/10

Language of the proceedings: EN

Title of invention:
Process for the production of a water-soluble polymer dispersion

Patentee:
HYMO CORPORATION

Opponent:
SNF Floerger

Headword:
-

Relevant legal provisions:
EPC Art. 114(2), 56, 123(2) and (3)

Keyword:
"Late filed claims - not admitted (late filing not sufficiently justified)"
"Extension beyond contents of application as filed (no) - incorporation of features previously indicated as non-essential permissible"
"Inventive step - main request (no): technical problem not solved over the whole area - auxiliary request (yes) - after amendment"

Decisions cited:
G 0009/91, G 0010/91, T 0022/81, T 0260/85, T 0014/83, T 0295/87, T 0406/86, T 0550/88, T 0020/81, T 0939/92, T 0133/85, T 0409/91

Headnote:

I. A lack of communication between the Proprietor and its Licensee does not afford sufficient justification upon which the Board can exercise its discretion to admit requests filed at an extremely late stage into the appeal.

II. Whereas according to the Boards' jurisprudence the deletion from a claim of features consistently described as essential is not permissible under Article 123(2) EPC, the converse is not true, so that any attempt to interpret Article 123(2) EPC in the sense that the introduction into a claim of features previously described as non-essential would not be permissible, must fail.

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Headnote follows:

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0583/93 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 4 January 1996

Appellant: (Proprietor of the patent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 23 April 1993 revoking European patent No. 0 183 466 pursuant to Article 102(1) EPC.**

Composition of the Board:

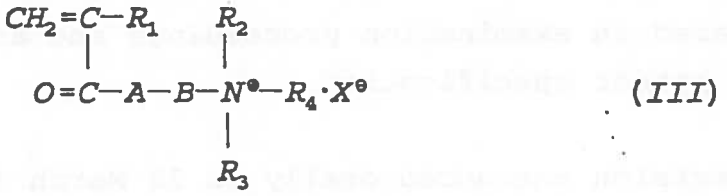
Chairman: C. Gérardin
Members: B. ter Laan
J. Stephens-Ofner

Summary of Facts and Submissions

I. Mention of the grant of European patent No. 0 183 466 in respect of European patent application No. 85 308 398.8, filed on 18 November 1985, claiming priority from three earlier applications in Japan (244152/84 of 19 November 1984, and 158709/85 and 158711/85, both of 18 July 1985), was announced on 29 August 1990, on the basis of thirteen claims, Claim 1 reading as follows:

"A process for the production of a water-soluble polymer dispersion, which process comprises polymerizing a water-soluble monomer with stirring in an aqueous solution of at least one salt, in the presence of a dispersant."

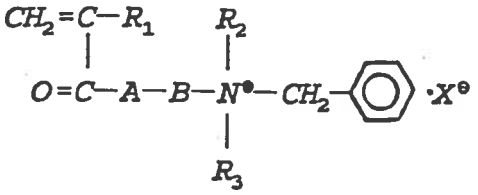
Claims 2 to 13 were dependent and referred to preferred embodiments of the process for producing a water-soluble polymer dispersion as defined by Claim 1. In particular, Claim 8 specified the dispersant as being "a polymer of one or more cationic monomers of the formula (III) below or a copolymer containing 20 mole% or more thereof:



(III)

wherein R_1 is H or CH_3; R_2 and R_3 are each an alkyl group of 1-2 carbon atoms; R_4 is H or an alkyl group of 1-2 carbon atoms; A is an oxygen atom or NH; B is an alkylene group of 2-4 carbon atoms or a hydroxypropylene group; and $X^{\ominus}$ is an anionic counterion."

Further, Claim 10 specified the water-soluble monomer as being "a mixture of one or more cationic monomers of the formula (I) below and other monomer(s) copolymerizable therewith at a molar ratio in the range of 100:0 to 5:95:



(I)

wherein R_1 is H or CH_3; R_2 and R_3 are each an alkyl group of 1-3 carbon atoms; A is an oxygen atom or NH; B is an alkylene group of 2-4 carbon atoms or a hydroxypropylene group; and $X^{\ominus}$ is an anionic counterion."

II. On 25 April 1991 a Notice of Opposition was filed against the granted patent, requesting the revocation of the patent in its entirety, on the grounds set out in Article 100(a) EPC. This opposition was essentially based on US-A-4 380 600 (D1) and GB-A-1 457 958 (D2), which is equivalent to FR-A-2 251 367 (D2a) already considered in examination proceedings and acknowledged in the patent specification.

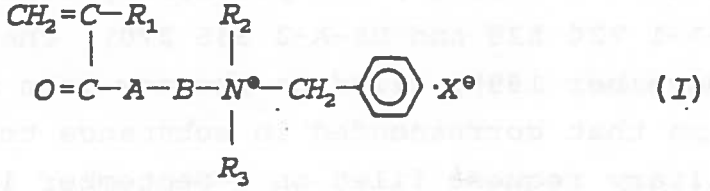
III. By a decision announced orally on 22 March 1993, issued in writing on 23 April 1993, the Opposition Division revoked the patent. The decision was based upon three sets of claims, in the form of a main and two auxiliary requests. The Opposition Division held that Claim 1 of the main request was not novel, Claim 1 of the first auxiliary request did not comply with Article 123(2) EPC and the claimed subject-matter of the second auxiliary request lacked an inventive step. In particular, the

Opposition Division found that the features of Claims 7 and 9 of the second auxiliary request, which corresponded to Claims 8 and 10 as granted, were not inventive.

IV. The Appellant (Proprietor) lodged an appeal against that decision on 23 June 1993 and paid the prescribed fee at the same time. With the Statement of Grounds of Appeal filed on 1 September 1993, three sets of claims were filed as main and two auxiliary requests. With a letter dated 26 January 1995 the Appellant submitted again its requests filed on 1 September 1993, and also requested an acceleration of the procedure.

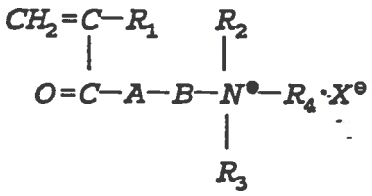
V. Following a communication from the Board dated 22 March 1995, in which various objections under Articles 54, 56, 84 and 123(2) EPC against the three sets of claims were raised, but in which it had also been indicated that the wording of Claim 1 of the second auxiliary request overcame most of the raised objections, the Appellant on 17 May 1995 filed as the sole request a slightly amended version of Claim 1 of that second auxiliary request, which reads:

"A process for the production of an aqueous dispersion of a water-soluble polymer, characterized in that at least one water-soluble monomer (A) of the general formula (I),



(I)

wherein R_1 is H or CH_3, R_2 and R_3 are each an alkyl group of 1 to 3 carbon atoms, A is an oxygen atom or NH, B is an alkylene group of 2 to 4 carbon atoms or a hydroxypropylene group and $X^{\ominus}$ is a counterion, and if desired at least one other water-soluble monomer (B) copolymerizable therewith in a molar ratio of (A) to (B) in the range of 100:0 to 5:95 is polymerized with stirring in an aqueous salt solution and in the presence of a polymer electrolyte dispersant soluble in the aqueous salt solution and having 20 mole% or more of monomer units of the general formula (III),



(III)

wherein R_1 is H or CH_3, R_2 and R_3 are each an alkyl group of 1 to 2 carbon atoms, R_4 is H or an alkyl group of 1 to 2 carbon atoms, A is an oxygen atom or NH and B is an alkylene group of 2 to 4 carbon atoms or a hydroxypropylene group and $X^{\ominus}$ is a counterion, the salt and the salt concentration is such that the polymer formed is precipitated."

VI. As a reaction to a submission from the Respondent (Opponent) dated 7 August 1995, in which reference was made to two further, not previously filed, documents (DE-A-1 720 528 and US-A-3 336 270), the Appellant, on 27 November 1995, filed as the new main request a set of claims that corresponded in substance to the first auxiliary request filed on 1 September 1993, and maintained the above-mentioned single claim (point V) as an auxiliary request.

VII. By a letter received on 3 January 1996, one day before the oral proceedings, the Appellant withdrew the main request then on file, and instead filed two new sets of claims as main and first auxiliary requests, in which features not hitherto considered had been incorporated from the description (main request) and features previously abandoned, in particular following the communication of the Board, had been reintroduced (first auxiliary request). No reason was given for the lateness of these new requests, nor was there any argument concerning the newly introduced features. The single claim mentioned above (point V) was maintained as second auxiliary request.

VIII. On 4 January 1996 oral proceedings were held, at which first of all the lateness of the claims filed one day before the oral proceedings was discussed.

The Appellant argued essentially that only after the filing of the claims in response to the communication of the Board, did it become apparent that the US company that had taken a licence in respect of the patent in suit, considered those claims to be undesirably narrow. After a visit of the Appellant's representative to that company on 5 and 6 December 1995, who then took the whole file with him, a courier service was charged with the transport of that file from the US back to Germany, but did not deliver it until the middle of December. No copy had been kept in Europe. Therefore, there had been no possibility to formulate new claims earlier.

The Respondent strongly objected to the filing of two new requests only one day before the hearing. Such late filing, it submitted, was clearly unfair and a grave abuse of procedure, which jeopardised its rights.

After having heard the reasons given by the Appellant and the comments of the Respondent, the Board decided not to admit the new requests into the proceedings.

IX. Then the Appellant filed again the above-mentioned single claim as main request, and as an auxiliary request an amended version of that claim, which comprises the incorporation of the amount of polymer electrolyte dispersant in order to take into account an objection made by the Board. The amended part of the claim reads as follows: "... in the presence of at least 0.1 % by weight, based on the aqueous salt solution, of a polymer electrolyte dispersant ...".

The arguments of the Appellant can be summarized as follows:

(i) Regarding Article 123(2) EPC, the amendments in the claims were based upon disclosures in the patent specification and were also supported by the information present in the first priority document, and therefore were admissible.

(ii) As regards novelty, D1 did not disclose a polymerisation in the presence of a dispersant which was soluble in the aqueous salt solution, since the water-soluble polymers used in D1 acted as phase separating agents and not as dispersants. Moreover, D1 was not an enabling disclosure since a repetition of Examples 1 and 21 did not result in a polymer dispersion. Also, according to D1 the presence of a salt was not an essential feature, but merely a possibility, and it did not serve as a precipitating or separating agent. An experimental report was filed in support of these arguments.

D2 referred to a suspension polymerisation process carried out in the presence of an organic solvent and did also not anticipate the claimed subject-matter.

(iii) As none of those or any other documents cited during the proceedings contained any pointer to the combination of compositional features now required, the claimed subject-matter was also inventive.

In support of its arguments, during the oral proceedings the Appellant filed 5 electron microscope photographs in order to illustrate the morphologies of the dispersions of Example 19 and Comparative Example 1 of the patent in suit as well as of Example 1 of D1. In addition, differences in the water-solubilities of two polymer dispersions were demonstrated experimentally during the oral proceedings. These two dispersions were stated to have been prepared according to the patent in suit and according to D1, respectively, but no particulars about the exact preparation of any of these dispersions were forthcoming. The provenance and composition of these dispersions were, accordingly, not accepted by the Respondent.

X. In its submissions of 7 August 1995 as well as during the oral proceedings the Respondent argued essentially that the introduction into the claim of features which had now to be regarded as essential, although they had previously, in the original description as well as in the Appellant's submissions made in the course of the proceedings before the Examining and Opposition Divisions and the Board of Appeal, been indicated as non-essential, was contrary to the provisions of the EPC. Moreover, as the Respondent had not been heard on

such redefined subject-matter and the first instance had not taken it into account in its decision, an appeal on this matter was not legally possible.

The Respondent also made a three-fold objection against the wording of the claim of the main request:

(i) Neither the specific water-soluble monomer of general formula (I), nor the monomer of general formula (III) constituting at least partially the polymer electrolyte dispersant, were described as particularly preferred features in the application as originally filed. Their selection resulted in a definition of the invention which did not correspond to the original core of the invention as described at the date of priority, which was the use of a salt as a precipitating agent in the production of a water-soluble polymer (Article 123(2) EPC). In support of this part of its arguments the Respondent at the oral proceedings cited decision T 22/81 (OJ EPO 1983, 226) and distributed a summary of the file in the form of a table showing that the importance given by the Appellant to various features of the process had in fact changed in the course of the examining/opposition/appeal proceedings.

(ii) In view of the above, the amount of salt should be specified in the claims with a proper range indicating the concentration of the aqueous salt solution, and not by means of a merely functional definition (Article 84 EPC).

(iii) Both selections of monomer and dispersant were arbitrary and therefore could not be inventive, since D1 disclosed a process for producing an aqueous polymer dispersion, in which a monomer

within the terms of formula (I) and a polymer dispersant containing quaternary ammonium groups could be used (Article 56 EPC).

Furthermore, the Respondent submitted that the following two questions were of fundamental importance and requested a specific decision on them:

1. "Is it admissible to redefine the essential elements of the invention after the priority date, with no technical support in the specification? It is here referred to the "technical reality" concept."

2. "Is it admissible to draft a selection claim by just picking-up one species, when the specification shows no support of inventive step?"

XI. The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the single claim submitted in the course of oral proceedings by way of main request or on the basis of the single claim, likewise submitted by way of auxiliary request.

The Respondent requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.

Procedural matters

2. The Appellant filed two additional requests on 3 January 1996, namely one day before the oral proceedings. Both requests consisted of claims that were broader than those of the Appellant's previous single request filed on 17 May 1995, now maintained as the second auxiliary request, and the main request was broader than the main request as filed on 27 November 1995. The late filing of those requests, which were not a reaction to a communication by the Board or a submission by the Respondent, raises a procedural question.

2.1 The admissibility into the appeal proceedings of all late-filed matter, including requests, is a matter that is for the Board to decide in its discretion which has to be judicially exercised and take full account of the Enlarged Board's decisions in cases G 9/91, OJ EPO 1993, 408 and G 10/91, OJ EPO 1993, 420. Late-filed requests may thus be excluded from the proceedings if the reasons for their lateness are not justified in all the circumstances of the case, and even if those reasons are so justified, late-filed requests may be excluded if they are not clearly allowable having regard to the relevant provisions of the EPC (Article 102(3)). Conversely, even clearly allowable requests may be excluded if the reasons for their late filing are unjustified in all the circumstances of the case.

2.2 The most relevant circumstances here, as they appear from the file and as they were evidenced (Article 117 EPC) by the Appellant's representative and a senior executive of the Licensee of the patent in suit in answer to specific and detailed questions put to them by the Board, are as follows:

Sometime during 1991 a non-exclusive licence agreement was entered into by the Proprietor and a large US corporation in respect of the patent in suit. On 26 January 1995 the Proprietor's professional representative requested "an accelerated handling of the appeal" on the ground that there were a number of potential licensees of the patent in suit, whose commercial decisions hinged upon the outcome of the appeal proceedings. The Proprietor's professional representative did in fact have a face-to-face meeting with the US Licensee as late as on the 5 and 6 December 1995. During this meeting the commercially undesirable narrowness of the requests filed on 27 November 1995 was drawn to his attention. The subsequent course of communications between the Licensee and the Proprietor is not clear, save the matters already mentioned in point IX of the Summary of facts of Submissions. The two sets of requests were then submitted on the 3 January 1996, reaching one of the Respondent's representatives during the afternoon/evening of that day at his hotel in Munich.

2.3 It is clear to the Board that scant, if indeed any, consultation took place between the Licensee and the Proprietor from the signing of the licence agreement in 1991 until late in 1995, when, eventually and belatedly, the commercially unsound scope of the requests then on file became apparent, and thus the need for broader claims became manifest.

The reason for such a lax state of affairs is not evident and is, indeed, surprising - bearing in mind in particular, that the patent was revoked by a decision dated 23 April 1993 and that in normal circumstances, licence agreements include royalty clauses keyed to the subsistence of the licensed patent(s). Whilst the Proprietor is a comparatively small company, the Licensee is clearly not, as can be inferred, for example, from the presence at the hearing of the appeal of a significant number of its senior functional executives, including the head of its in-house patent and licensing division.

It is to this poor "system" of communication that the extremely late filing of the two additional requests must, in the Board's judgement, be solely attributable. Such a state of affairs clearly does not afford sufficient justification upon which the Board can exercise its discretion in the Proprietor's favour to admit these two new requests into the appeal.

2.4 For these reasons, the Board decided that these requests were not to be admitted and that the appeal would concern itself with the remaining second auxiliary request, which at least in substance had been on file since 1 September 1993, and/or with any other requests that might justifiably arise from the parties' submissions during these proceedings.

3. During the late stage of the written appeal procedure, the Respondent mentioned two additional documents that had not been so far relied upon either in the opposition or the appeal proceedings (see point VI above), in order to support its objection of lack of inventiveness.

However, these documents were no longer relied upon during the oral proceedings in the appeal. These documents are therefore disregarded pursuant to Article 114(2) EPC.

Main request

4. The wording of the single claim does not give rise to any objections under Article 123(2) and (3) EPC for the following reasons.

Article 123(3)

4.1 With respect to Claim 1 as granted the wording of the single claim differs by (i) the use of the two-part form, (ii) the use of a specific class of water-soluble monomers, (iii) the use of a specific class of polymer dispersants, and (iv) the requirement that the salt concentration should be such that the polymer formed is precipitated. As, on the one hand, the use of the two-part form has no impact on the scope of the claim and, on the other hand, the specification of compounds and the introduction of concentration requirements for the aqueous salt solution result in a restriction of the scope of the claim, the Board concludes that the now claimed subject-matter has not been amended in such a way as to extend the protection conferred by the claims as granted.

Article 123(2)

4.2 The above-mentioned differences between the present claim and Claim 1 as granted (point 4.1) also apply to Claim 1 as originally filed, since that claim does not differ from Claim 1 as granted.

(i) As the use of the two-part form merely is of editorial nature, this amendment cannot be objectionable under Article 123(2) EPC.

(ii) The use of the specific class of water-soluble monomers was disclosed in Claim 10 as originally filed.

(iii) The use of the specific class of polymer dispersants finds its basis in Claim 8 as originally filed.

(iv) Claim 2 as originally filed states that "...the salt and the salt concentration are such that the polymer is not dissolved...". Page 2, line 34 to page 3, line 3 of the application as originally filed (page 2, lines 44 to 47 of the patent as granted) refers to the polymerisation being conducted "...while depositing the polymer as fine particles... The aqueous salt solution is required to ... precipitate the polymer.", and according to page 4, last line/page 5, first line of the application as originally filed (page 3, lines 27 to 28 of the patent as granted) "there is one requisite that the formed polymer of the monomer (A) not be soluble in the aqueous salt solution.". These disclosures taken together are considered to provide a sufficient basis for the requirement that the salt concentration should be such that the polymer formed is precipitated.

4.3 Although the Respondent did not deny that there was adequate support for the individual features, it did submit that the combination of features (ii) to (iv) was artificial, since there was no indication in the patent

specification that these features might provide any kind of advantage, so that it resulted in a new teaching which had no basis in the original application.

4.4 The description of the patent specification contains a list of specific acrylic water-soluble monomers (A) as well as two general formulae (I) and (II) of cationic monomers (page 3, line 24 to page 4, line 17 of the application as originally filed; page 2, line 59 to page 3, line 25 of the patent as granted), but no preference is given to any of them. Similarly, no preference is given to any of the polymer electrolyte dispersants mentioned in the description as long as they are soluble in the aqueous salt solution used for polymerisation (page 7, lines 5 to 8 of the application as originally filed; page 3, lines 58 to 59 of the patent as granted).

However, the description also specifies that where the polymer formed is cationic, then a cationic polymer electrolyte is preferred, the latter being then "preferably a polymer of one or more cationic monomers of ... formula (III) or a copolymer ... thereof..." (page 7, line 13 to page 8, line 5 of the application as originally filed; page 3, line 63 to page 4, line 14 of the patent as granted). Moreover, the set of claims both as originally filed and as granted was already directed to a process based on the combination of features (ii) to (iv), since Claim 10, which concerned the use of monomers of formula (I), was dependent upon Claim 8, which concerned the use of a polymer dispersant derived from a monomer of formula (III) during a polymerisation process in which a salt was used as a precipitating agent (Claim 2 both as originally filed and granted). Furthermore, this particular combination is illustrated in the Examples 1 to 9 and 19 both of the patent as

granted and of the application as originally filed. Thus, there is ample basis for a combination of features (ii) and (iii) in the framework of a polymerisation process comprising feature (iv).

In view of the above, the Board concludes that the now claimed subject-matter has not been amended in such a way so as to contain subject-matter which extends beyond the content of the application as originally filed.

4.5 The EPC contains no requirement that forbids the redefinition of an invention provided that Article 123(2) and (3) EPC is complied with, which, as demonstrated above, is the case here. Such a redefinition is often necessary in order to take into account prior art not known to the applicant at the priority date. Therefore, it is possible that features described as optional at the priority date later do become essential in the sense that they are necessary to delimit the invention from the prior art. The introduction of such features is permissible provided that, first, the application as originally filed contains an adequate basis for such limitations and, secondly, the resulting combination of features is still in line with the teaching of the application as originally filed. In view of this, whereas according to the Boards' jurisprudence the deletion from a claim of features consistently described as essential is not permissible under Article 123(2) EPC (e.g. T 260/85, OJ EPO 1989, 105), the converse is not true, so that the Respondent's attempt to interpret Article 123(2) EPC in the sense that the introduction into a claim of features previously described as non-essential would not be permissible, must fail.

4.6 In the present case, the Respondent submitted that the use of a salt as a precipitating agent had been indicated as the only essential element of the invention and that the specific classes of monomers now required had been considered as non-essential throughout the whole proceedings. Even if this were the case, in view of the prior art cited during the proceedings, it was regarded appropriate to redefine the invention along the present lines in order to overcome the objections of lack of novelty and inventive step. Furthermore, the redefined claim is directed to a polymerisation process requiring as an essential feature the use of a salt as a precipitating agent (feature (iv)) and, as shown above, the addition of the compositional features (ii) and (iii) merely specifies the scope of that process, which obviously cannot contravene Article 123(2) and (3) EPC.

By incorporating the features originally present in dependent claims into the single claim, the Appellant, contrary to the facts in case T 22/81 (supra), where the Applicant explicitly stated that certain elements were not intended to provide an inventive step, implicitly recognised the essential nature of these features.

4.7 Moreover, although it is true that the Appellant in the course of the proceedings often changed the scope of the claims so that the tenor of the redefinitions as a whole was not always clear, nevertheless each of the specific classes of monomers of formulae (I) and (III) as well as their combination as now claimed were present not only in the first priority document, but also in the application at its filing date, in the form of dependent claims (Claims 8 and 10), which by their very nature are directed to preferred embodiments of the invention. These claims were also contained in the patent as granted (Claims 8 and 10) and the Opposition Division referred to them in its decision (point 6, in particular

points 6.5, 6.7 and 6.10). Therefore, the Respondent did have ample opportunity to be heard on the redefined subject-matter and the first instance did in fact take it into account in its decision. It follows that the Respondent's submission that an appeal was not legally possible (G 9/91, supra and G 10/91, supra) must fail.

4.8 Furthermore, Claim 1 of the second auxiliary request filed on 1 September 1993 together with the Grounds of Appeal already comprised a combination of features (ii) to (iv) and was thus in substance identical with the single claim now on file. The Respondent should therefore have been aware that this definition of the process might subsequently become the basis of the main request.

4.9 For these reasons, the Board concludes that the requirements of Article 123(2) and (3) EPC are fulfilled.

Articles 83/84

5. The amount of salt necessary for the invention in order to result in a polymer dispersion having the desired properties, is defined in functional terms. The description does not suggest that the exact amount is an essential feature of the invention; it only specifies that it should be sufficient to cause the polymer to precipitate. In particular, on page 3, lines 48 to 50 of the patent specification, it is stated that the concentration of the salt is not particularly restricted and varies depending on the molar ratio of the ionic monomers and the salt used. Consequently, only a preferred range extending from 15% by weight to the upper limit of solubility can be defined.

In addition, the absence of a specific range of concentration does not prevent the skilled person to carry out the process as claimed. There can be no doubt, in the Board's view, that, on the basis of the practical information provided in the description and in the numerous examples as well as, if necessary, of routine tests, a skilled person would know how to determine the optimal amount of salt, depending on the compounds chosen. As mentioned in decision T 14/83 (OJ EPO 1984, 105), occasional lack of success of a claimed process does not impair its feasibility in the sense of Article 83 EPC if, for example, some experimentation is still to be done to transform the failure into success, provided that such experimentation is not an undue burden and does not require inventive activity (Reasons, point 6, paragraph 1).

For these reasons the Board concludes that in respect of the amount of salt to be used, the wording of the claim is not objectionable under Articles 83 and 84 EPC.

Novelty

6. D1 describes a process for producing an aqueous dispersion of water-soluble polymers, comprising (co)polymerising (a) the monomer components of a composition containing at least one water-soluble ethylenically unsaturated monomer to form only a water-soluble (co)polymer, which polymerisation is carried out in an aqueous solution of (b) at least one water-soluble polymer which should be different from the water-soluble polymer derived from the monomer components (a) (Claim 1; column 5, lines 51 to 53). The possible presence of a salt and its advantageous effect on the flowability of the aqueous polymer dispersion are disclosed in column 7, lines 10 to 31. In Example 21 the use of a salt is described. In column 4, line 59 to

column 5, line 18, the monomers (a) are specified and in column 5, lines 6 to 9 a monomer is exemplified that falls within the specific definition of present formula (I). Information as regards the composition, the functionality and the molecular weight of the water-soluble polymer (b) is given in column 5, line 38 to column 6, line 19; in particular, polymers containing quaternary ammonium groups are said to be suitable (column 5, lines 41 to 44). However, monomers within the terms of present formula (III) as required for the formation of the polymer electrolyte dispersant are not mentioned.

D2 refers to oil-in-water polymerisation, which is a different kind of process from the one in dispute, and it mentions neither of the specific monomers of the present claim. It has not been relied upon anymore during the oral proceedings.

Therefore, the Board concurs with the opinion of both parties that the subject-matter of the single claim is novel.

Inventive step

7. The patent in suit concerns a process for the production of a water-soluble polymer dispersion.

7.1 As stated above, such a process is disclosed in D1, in particular Example 21, which the Board, like the Opposition Division, regards as the closest state of the art. According to that embodiment acrylic acid is polymerised in the presence of polyethylene glycol, polyvinyl alcohol and sodium chloride. It thus differs from the now claimed subject-matter in the monomer to be polymerised and in the dispersant used.

7.2 In the description of the patent in suit and according to the Appellant's submission during the oral proceedings, the object of the invention is to be seen as the production of a water-soluble polymer dispersion having improved viscosity and flowability, so that it could be transported by pumping (page 2, lines 53 to 54 of the patent as granted). The polymer dispersions obtained according to D1 are said to be stable and have a highly flowable state at high concentrations of polymer (column 3, lines 2 to 5). However, the viscosity values reported in D1 cannot be compared with those of the patent in suit as the concentration of the various polymer dispersions is different, so that it is not clear whether the viscosity and flowability of the dispersions according to the patent in suit are indeed improved vis-à-vis D1. Therefore, the technical problem underlying the patent in suit has to be reformulated on a less ambitious basis, namely the definition of an alternative process for the production of further water-soluble polymer dispersions having low viscosity and good flowability.

7.3 According to the patent in suit this problem is solved by polymerising monomers of a specific class in the presence of a specific class of dispersant and a sufficient amount of a salt so that the polymer is precipitated, as indicated in the single claim.

7.4 Irrespective of the dispersant used, however, the description of the patent in suit makes it quite clear that with less than 0.1% by weight, based on the aqueous salt solution, of dispersant, "the formed polymer cannot be obtained in a dispersed form and sticks to each other to grow into a bigger mass" (page 3, lines 52 to 54). In the absence of this quantitative feature, the desired

effect may or may not occur and the claimed subject-matter cannot thus be regarded as a general solution to the above-defined technical problem.

7.5 As pointed out by the Respondent during the oral proceedings, this is objectionable in two respects.

The first is that a technical effect which does not manifest itself over the whole area of the claimed subject-matter cannot be relied upon to demonstrate an inventive step (T 20/81, OJ EPO 1982, 217; T 939/92, to be published). In the present case, the fact that a proper dispersion is formed only above a certain amount of dispersant means that the claim on file does not meet the requirement of Article 56 EPC.

The second one arises from the requirement that a claim should contain all the features which are deemed necessary to define the invention for which protection is sought. In other words, the technical features used to define an invention in the claims should be the same as those highlighted in the description as being essential (T 133/85, OJ EPO 1988, 411; T 409/91, OJ EPO 1994, 653). This requirement reflects the general legal principle that the extent of the patent monopoly should correspond to the technical contribution to the art in order for it to be supported by the description within the meaning of Article 84 EPC.

For these reasons, the claim according to the main request contravenes both Articles 56 and 84 EPC and has thus to be rejected.

Auxiliary request

Article 123(2) and (3)

8. The single claim of the auxiliary request differs from the one of the main request in that it contains a specification of the amount of dispersant, which finds its basis in the original description, page 6, lines 19 to 23 (page 3, lines 52 to 54 of the patent as granted). Regarding the other features present in the claim, the same reasons as given for the main request are valid (see point 4 above). The wording of the claim does therefore not give rise to any objections under Article 123(2) and (3) EPC.

Novelty

9. As the scope of the claim is narrower than the one of the main request, the finding for the main request (see point 6 above) also applies for the present claim, so that the Board concludes that the subject-matter of this claim is novel.

Inventive step

10. In view of the examples in the patent in suit the Board is satisfied that the combination of features of the process according to the claim provides an effective solution to the above-defined technical problem. It remains to be decided whether the claimed subject-matter is obvious having regard to the prior art.

10.1 Although one of the monomers exemplified in D1 (column 5, lines 6 to 9) falls within the terms of formula (I) of the patent in suit (feature (ii)), this fact alone does not render obvious the other features of the process as claimed, let alone their combination.

10.1.1 The above applies in the first place to the definition of the polymer dispersant (feature (iii)). D1 gives a broad definition of the water-soluble polymer (b), but the compounds actually mentioned do not point at acrylic polymer dispersants. According to D1, column 5, lines 38 to 65, the water-soluble polymer should have a molecular weight of 300 to 10,000,000 and contain at least one functional group selected from ether, hydroxyl, carboxyl, sulfone, sulfate ester, amino, imino, tertiary amino, quaternary ammonium and hydrazino groups, preferably from ether, hydroxyl and carboxyl groups; suitable dispersants would be natural polymers such as starch or cellulose, or derivatives thereof, polyetherpolyols, polyethyleneimine as well as addition polymers such as polyvinyl alcohol, polyvinyl pyrrolidone and polyvinyl pyridine.

In view of this general definition and the compounds listed, the sole mention of quaternary ammonium groups as possible functional group among other non-preferred groups can, unlike the Respondent's interpretation during the oral proceedings, not be construed as pointing at acrylic monomers within the terms of formula (III) of the patent in suit. On the contrary, the requirement that polymer (b) should be different from the polymer formed from monomer (a) (column 5, lines 51 to 53) would not be an incentive to choose a polymer dispersant derived from an acrylic monomer with a quaternary ammonium group, and would rather deter the skilled person from selecting the present (acrylic) polymer as a dispersant (feature (iii)) in the polymerisation of the present (acrylic) monomer (feature (ii)).

10.1.2 Similarly, the use of an aqueous salt solution (feature (iv)) to ensure the formation of the polymer dispersion is not suggested by D1.

As explained in D1, column 3, lines 46 to 64, when the water-soluble ethylenically unsaturated monomer (a) is polymerised in the aqueous solution of the water-soluble polymer (b), the resulting water-soluble ethylenic polymer forms a loose water-containing complex with the water-soluble polymer (b) without being dissolved in water. Phase separation occurs between the complex and the aqueous phase to form microscopic particles, which would explain why a low-viscosity aqueous dispersion results. As another possibility, since the resulting water-soluble ethylenic polymer and the water-soluble polymer (b) originally present do not dissolve in each other, the resulting polymer and the aqueous solution of the polymer (b) are subject to phase separation with the progress of the polymerisation. Thus, the resulting polymer becomes microscopically small globules which disperse in the aqueous solution of the water-soluble polymer (b) thereby forming a low-viscosity aqueous dispersion. Whatever the actual mechanism, it is thus evident that an aqueous salt solution is not involved in the formation of the polymer dispersion.

It is not disputed that D1 also mentions the possibility to operate in the presence of inorganic salts (column 7, lines 10 to 25). However, this is nothing more than an optional embodiment from which only a limited improvement of the stability and flowability of the aqueous dispersion is to be expected (column 7, lines 26 to 28); in fact, the same effect presumably based on the same mechanism could be achieved by carrying out the polymerisation in the presence of an organic solvent (column 7, lines 46 to 55). Moreover, the Respondent failed to demonstrate how those effects could be related to the precipitation of the polymer.

10.1.3 In conclusion, even if one assumes that D1 properly discloses feature (ii), the teaching of this document is such that a skilled person would be discouraged to combine it with feature (iii) and would have no reason to envisage feature (iv).

10.2 D2 relates to a different kind of polymerisation process and mentions neither the specific monomers, nor the specific dispersant polymer as required in the claim under consideration. In particular, D2 concerns a polymerisation process comprising copolymerizing methacrylic acid and an olefinically-unsaturated cross-linking agent, initiated by a two part redox free radical system and carried out in a reaction mixture comprising a fine suspension of droplets of an organic phase in an aqueous phase, wherein the organic phase contains the methacrylic acid, a cross-linking agent and part of the initiator system, and the aqueous phase contains at least 15% weight inert salt per volume aqueous phase, a suspending agent and part of the initiator system (Claim 1). The purpose of the salt is to reduce the solubility of the methacrylic acid in the aqueous phase (page 2, lines 26 to 30; compare Examples 1 and 2, 5 and 6). The requirements for the suspending agents are not very critical provided they have the required solubility; polyvinyl alcohol is exemplified (page 2, lines 57 to 70; examples).

It is clear that, apart from the fact that neither the monomer nor the dispersant as now used are mentioned, the polymerisation system of D2 is quite different from the present one. Moreover, the purpose of the salt as indicated in D2 refers to the solubility of the monomer only and cannot be related to the precipitation of the polymer. There would thus be no incentive for a skilled person to consider such a feature in order to achieve a

different technical effect in the framework of a different polymerisation process as specified in the patent in suit.

These considerations demonstrate that D2 cannot render obvious feature (iv), let alone the combination thereof with the other features of the claim.

10.3 The comparison with the known processes thus shows that the process as claimed is based upon a combination of features which cannot be derived from the prior art teachings. First, the combination of features (ii) and (iii) as required in the patent in suit corresponds to a polymerisation system which the skilled person would not be inclined to consider in view of the teaching of D1; secondly, whilst neither of D1 and D2 teach a contribution of the inorganic salt to the precipitation of the polymer, in the patent in suit this compound is essential to ensure the formation of a polymer dispersion. For these reasons, the Board concludes that the process as defined in the single claim is inventive.

11. From the above it is evident that the photographs filed and the experiments performed during the oral proceedings do not play any role for any issue in the present decision. Therefore, the Respondent's questions regarding the exact details of obtaining the photographs and the exact conditions of the production of the polymer dispersions used need not be answered.

12. As regards the two specific questions posed by the Respondent (see point X above), the Board would point out that both have already been answered. Furthermore, the reasons given above in relation to Article 123 EPC (point 4) make it clear that these questions do not reflect the reality of the case.

As regards the first question, a comparison between Claim 1 as granted and the single claim now on file shows that both processes are based on the same technical concept, which is the polymerisation in the presence of a salt (feature (iv)). The choice of a specific class of cationic monomers in combination with a specific class of cationic polymer electrolytes as dispersants is nothing more than a normal limitation arising from the grounds of opposition; such a limitation clearly does not modify the technical framework of the invention.

The same applies to the second question since, in the first place, the selection has not been made from a list of equivalent compounds and, in the second place, the process as claimed does involve an inventive step. As stated above (point 4), features (ii) and (iii) are disclosed in combination as a preferred embodiment not only in the original claims, but also in numerous examples of the patent specification.

13. In the absence of a description adapted to the new claim, the case has to be remitted to the first instance. In view of the various modifications made in the adapted descriptions filed together with the various sets of claims in the course of the appeal proceedings, which went well beyond a normal adaptation to the new scope of the claimed subject-matter, the Board deems it suitable to recall that amendments that cannot be regarded as arising from the grounds of opposition, are not appropriate or necessary and, therefore, are not admissible in the sense of Rules 57(1) and 58(2) EPC (cf. T 406/86, OJ EPO 1989, 302; T 295/87, OJ EPO 1990, 470 and T 550/88, OJ EPO 1992, 117).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the Opposition Division with the order to maintain the patent with the claim submitted in the course of oral proceedings by way of auxiliary request and after the description has been adapted to that claim.

The Registrar:

E. Görgmaier

The Chairman:

C. Gérardin