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D E C I S I O N
of 19 January 2005

Case Number: T 0045/03 - 3.3.3

Application Number: 97301238.8

Publication Number: 0792890

IPC: C08F 2/38

Language of the proceedings: EN

Title of invention:

Process for preparing phosphonate-terminated polymers

Patentee:

Rohm and Haas Company

Opponent:

Great Lakes Chemical (Europe) GmbH
BASF Aktiengesellschaft

Headword:

-

Relevant legal provisions:

EPC Art. 123(2), 123(3)

EPC R. 57(a)

Keyword:

"Main request - added subject-matter (yes)"

"Main request - extension of scope of protection (yes)"

"Admissibility of late-filed requests (no)"

Decisions cited:

G 0009/91, T 0383/88, T 0614/90, T 0577/97

Catchword:

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Case Number: T 0045/03 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 19 January 2005

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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office dated
18 September 2002 and posted 21 October 2002
concerning maintenance of European patent
No. 0792890 in amended form.

Composition of the Board:

Chairman: R. Young
Members: C. Idez
H. Preglau

Summary of Facts and Submissions

- I. The grant of the European patent No. 0 792 890 in the name of Rohm and Haas Company in respect of European patent application No. 97 301 238.8 filed on 25 February 1997 and claiming priority of the US patent application No. 12644 filed on 1 March 1996 was announced on 29 December 1999 (Bulletin 1999/52) on the basis of 15 claims.

Independent Claim 1 read as follows:

"1. A process for preparing phosphonate-terminated polymers having a weight average molecular weight of less than 20,000, comprising polymerizing monomers selected from one or more of unsaturated carboxylic acid monomers, unsaturated "non-carboxylic" acid monomers and unsaturated acid-free monomers, in the presence of (a) water, (b) one or more water-soluble initiators and (c) phosphorous acid or a salt thereof; wherein the unsaturated carboxylic acid monomers comprise unsaturated monocarboxylic acid monomers and/or unsaturated dicarboxylic acid monomers; wherein from 75 to 100 percent by weight of the unsaturated monocarboxylic acid monomers are metered into a polymerization reactor containing water and from 25 to 100 percent by weight of the phosphorous acid or salts thereof; wherein an alkaline neutralizer is present during the polymerization to neutralize at least 30 percent, based on equivalents, of the acid groups of the unsaturated carboxylic acid monomers present; and wherein an in-process solids level is from 40 to 70 percent, based on the weight of solid reactants

relative to the combined weight of solid reactants and water at the end of the polymerization."

Claims 2 to 15 were dependent claims.

II. Two Notices of Opposition were filed against the patent, as follows:

(i) by Great Lakes Chemical (Europe) GmbH, on 28 September 2000, on the grounds of lack of novelty and lack of inventive step (Article 100(a) EPC), and

(ii) by BASF Aktiengesellschaft (Opponent II), on 29 September 2000, on the grounds of lack of novelty and lack of inventive step (Article 100(a) EPC).

After expiry of the opposition period, an objection of extension of subject-matter (Article 100(c) EPC) was raised by Opponent I in its letter dated 18 July 2002.

The objections were supported *inter alia* by the following documents:

D1: EP-A-0 491 391;

D2: US-A-5 294 686;

D3: US-A-5 077 361;

D4: US-A-4 621 127; and

D6: EP-A-0 510 831.

III. By a decision announced orally on 18 September 2002, and issued in writing on 21 October 2002, the Opposition Division held that the grounds of opposition did not prejudice the maintenance of the patent in amended form.

The decision was based on the following requests of the Patent Proprietor:

(i) A main request consisting of the set of Claims 1 to 15 as granted,

(ii) An auxiliary request consisting of Claims 1 to 2, as submitted at the oral proceedings of 18 September 2002, and of Claims 3 to 15 as granted.

Claim 1 of the auxiliary request read as follows:

"A process for preparing phosphonate-terminated polymers having a weight average molecular weight of less than 20,000, comprising polymerizing monomers selected from one or more of unsaturated carboxylic acid monomers, unsaturated "non-carboxylic" acid monomers and unsaturated acid-free monomers, in the presence of (a) water, (b) one or more water-soluble initiators and (c) phosphorous acid or a salt thereof; wherein the unsaturated carboxylic acid monomers comprise unsaturated monocarboxylic acid monomers and/or unsaturated dicarboxylic acid monomers; wherein from 75 to 100 percent by weight of the unsaturated acid monomers or salts thereof and the one or more water-soluble initiators are metered into a polymerization reactor containing water and from 25 to 100 percent by weight of the phosphorous acid or salts

thereof; wherein an alkaline neutralizer is present during the polymerization to neutralize at least 30 percent, based on equivalents, of the acid groups of the unsaturated carboxylic acid monomers present; and wherein an in-process solids level is from 40 to 70 percent, based on the weight of solid reactants relative to the combined weight of solid reactants and water at the end of the polymerization."

The decision stated that granted Claim 1 met the requirements of Article 123(2) EPC but that the subject-matter of granted Claims 1 to 15 was not novel over Example 21 of document D1.

The decision held that Claim 1 of the auxiliary request met the requirements of Article 123(2) EPC.

It further stated that the subject-matter of the auxiliary request was novel over Examples 3 and 21 of D1, and over documents D2 and D4.

Concerning inventive step, the decision stated that, when starting from D1 as the closest state of the art, the technical problem was to maximise the yield of phosphonate-terminated polymers by improving the efficiency of the incorporation of phosphorous acid or salt thereof. This problem was solved by the use of an in-process neutralisation. Document D1 provided no hint to a neutralisation step.

The decision further held that when starting from D2 as closest prior art, the technical problem was also to improve the yield of phosphonate-terminated polymers. D2, however, used hypophosphorous acid or salts thereof.

According to the decision, there was no hint in D2 alone or in combination with D1 to lead one of using phosphorous acid or its salt.

Thus, the Opposition Division came to the conclusion that the subject-matter of the auxiliary request met the requirements of Article 56 EPC.

IV. A Notice of Appeal was filed on the 27 December 2002 by Opponent I with simultaneous payment of the prescribed fee.

In the Statement of Grounds of Appeal submitted on 28 February 2003, the Appellant argued essentially as follows:

(i) Article 100(c) EPC:

(i.1) The term "and/or" in Claim 1 was not supported by the application documents.

(i.2) Neither lines 25 to 26 and 57 to 58 on page 3 nor Table 4 of the patent specification could provide a support for that term.

(i.3) This amendment was therefore inadmissible.

(ii) Article 123(3) EPC:

(ii.1) According to granted Claim 1, 75 to 100% by weight of the unsaturated monocarboxylic acid monomer should be metered into the polymerization reactor.

(ii.2) Claim 1 of the auxiliary request, however, required that 75 to 100% by weight of unsaturated acid monomers be metered into the polymerization reactor.

(ii.3) This implied that Claim 1 of the auxiliary request no longer required that 75 to 100% by weight of unsaturated monocarboxylic acid monomer be added into the reactor.

(ii.4) Thus, Claim 1 of the auxiliary request contravened Article 123(3) EPC.

(iii) Interpretation of Claim 1:

(iii.1) According to Claim 1 unsaturated non-carboxylic acid and unsaturated acid-free monomers could be polymerized alone.

(iii.2) Thus, the neutralization step would be superfluous.

(iii.3) In Example 11 a salt of an unsaturated non-carboxylic acid was used. Thus, the monomer could not be neutralized.

(iii.4) Example 9 further showed that the process was carried out without neutralization.

(iii.5) Furthermore, according to the description (page 5, lines 8 to 25) the monomers could be neutralized before polymerization. There would be no in-process neutralization.

(iii.6) No indication was given for how long the metering should take place. Thus, claim 1 encompassed a process wherein all unsaturated acid monomers were added at the same time. This feature would not be suitable for establishing novelty over Example 21 of D1.

(iv) Novelty:

(iv.1) According to Example 21 of D1 the unsaturated acid was neutralized before polymerization. Thus, no in-process neutralization would be necessary.

(iv.2) Example 21 worked with an in-solid level of 63.1% and led to a polymer having a molecular weight lower than 20 000.

(iv.3) It was further clear from D1 (cf. page 6, lines 45 to 46; Example 1) that the unsaturated acid could be added to the phosphite.

(iv.4) Thus, the subject-matter of the patent in suit was anticipated in a novelty destroying manner.

(iv.5) Working Example 1 of D4 was also was novelty destroying for the subject-matter of Claim 1.

(v) Inventive step:

(v.1) According to Example 6 of D1, 82% of the phosphorous acid had reacted. The results from the patent in suit were between 15% (Example 1) and 72% (Example 7).

(v.2) Thus, starting from D1 the technical problem could not be seen in the improvement of phosphorous acid incorporation in the polymer.

(v.3) Taking further into account that Claim 1 was very broad in scope, the claimed process constituted an alternative process that the person skilled in the art would apply without inventive activity.

V. With its letter dated 22 September 2003, the Respondent (Patent Proprietor) submitted the following document:

D9: Hawley's Condensed Chemical Dictionary, 1997, page 900.

It also argued essentially as follows:

(i) Concerning Article 100(c) EPC:

The term "and/or" was supported, as stated in the decision of the Opposition Division, by lines 25 to 26, and the two last lines of page 3 of the patent in suit.

(ii) Article 123(3) EPC:

The term "wherein 75 to 100% by weight unsaturated acid monomers or salts thereof and the one or more water soluble initiators are metered into a polymerization reactor containing water and from 25 to 100% by weight of phosphorous acid or salts thereof" did not contravene Article 123(3) EPC since it was supported by lines 15 to 16 of page 6 of the published application.

(iii) Interpretation of the claims:

(iii.1) It was evident that, if the monomers were previously neutralized it was not necessary to neutralize them further, provided the reaction conditions were such to maintain the level of neutralization.

(iii.2) The skilled person would not interpret the term "metering" as meaning a process wherein all the unsaturated monomers were added at the same time to all the phosphorous acid.

(iv) Novelty:

(iv.1) It was known that polymers were macromolecules formed from 5 or more identical units called monomers (cf. D9).

(iv.2) D1 was directed to the manufacture of phosphonated compounds and oligomers.

(iv.3) Thus, Example 21 could not destroy the novelty of Claim 1.

(iv.4) Example 1 of D4 employed a thioglycolic acid chain transfer agent. This would preclude the formation of phosphate terminated polymers.

(v) Inventive step:

(v.1) From the combination of D1 with D4 or of D1 with D2, there was no suggestion that the process according

to Claim 1 would lead to an improved utilization of phosphorous acid.

(v.2) Thus, the claimed subject-matter involved an inventive step.

VI. With its letter dated 27 December 2004, the Appellant submitted a new document:

D10: C.A. Hampel et al "Glossary of Chemical Terms"; 1976; Van Nostrand Reinhold Company.

It also argued essentially as follows:

(i) Oligomers represented low molecular weight polymers (cf. D10).

(ii) Furthermore, several examples of D1 (e.g. Example 3 and 17) related to polymers.

(iii) It had been established by the Appellant that the process step disclosed in D1 (Example 21) were covered by the granted claims.

(iv) Thus the onus was on the Respondent to show that no phosphonated polymer was formed by the process of D1.

VII. With its letter dated 12 January 2005, the Respondent submitted the following document:

D11: Declaration by Mrs Josephine Eldredge, dated 11 January 2005;

as well as three sets of claims referred to as auxiliary requests I, II and III.

Claim 1 of auxiliary request I read as follows

"A process for preparing phosphonate-terminated polymers having a weight average molecular weight of less than 20,000, comprising polymerizing monomers selected from one or more of unsaturated carboxylic acid monomers, unsaturated "non-carboxylic" acid monomers and unsaturated acid-free monomers, in the presence of (a) water, (b) one or more water-soluble initiators and (c) phosphorous acid or a salt thereof; wherein the unsaturated carboxylic acid monomers are selected from one or more of unsaturated monocarboxylic acid monomers and unsaturated dicarboxylic acid monomers; wherein from 75 to 100 percent by weight of the unsaturated acid monomers or salts thereof and the one or more water-soluble initiators are metered into a polymerization reactor containing water and from 25 to 100 percent by weight of the phosphorous acid or salts thereof; wherein an alkaline neutralizer is present during the polymerization to neutralize at least 30 percent, based on equivalents, of the acid groups of the unsaturated carboxylic acid monomers present; and wherein an in-process solids level is from 40 to 70 percent, based on the weight of solid reactants relative to the combined weight of solid reactants and water at the end of the polymerization."

Claim 1 of auxiliary request II read as follows:

"A process for preparing phosphonate-terminated polymers having a weight average molecular weight of

less than 20,000, comprising polymerizing monomers selected from one or more of unsaturated carboxylic acid monomers, unsaturated "non-carboxylic" acid monomers and unsaturated acid-free monomers, in the presence of (a) water, (b) one or more water-soluble initiators and (c) phosphorous acid or a salt thereof; wherein the unsaturated carboxylic acid monomers are selected from one or more of unsaturated monocarboxylic acid monomers and unsaturated dicarboxylic acid monomers; wherein from 75 to 100 percent by weight of the unsaturated acid monomers or salts thereof and the one or more water-soluble initiators are metered over a period of time ranging from 5 minutes to 5 hours into a polymerization reactor containing water and from 25 to 100 percent by weight of the phosphorous acid or salts thereof; wherein an alkaline neutralizer is present during the polymerization to neutralize at least 30 percent, based on equivalents, of the acid groups of the unsaturated carboxylic acid monomers present; and wherein an in-process solids level is from 40 to 70 percent, based on the weight of solid reactants relative to the combined weight of solid reactants and water at the end of the polymerization."

Dependent claims 2 to 15 of both auxiliary requests I and II corresponded to granted Claims 2 to 15.

Claim 1 of auxiliary request III read as follows:

"A process for preparing phosphonate-terminated polymers having a weight average molecular weight of less than 20,000, comprising polymerizing monomers selected from one or more of unsaturated carboxylic acid monomers, unsaturated "non-carboxylic" acid

monomers and unsaturated acid-free monomers, in the presence of (a) water, (b) from 1 to 15% by wt based on total monomer wt of one or more water-soluble initiators and (c) phosphorous acid or a salt thereof; wherein the unsaturated carboxylic acid monomers are selected from one or more of unsaturated monocarboxylic acid monomers and unsaturated dicarboxylic acid monomers; wherein from 75 to 100 percent by weight of the unsaturated acid monomers or salts thereof and the one or more water-soluble initiators are metered into a polymerization reactor containing water and from 25 to 100 percent by weight of the phosphorous acid or salts thereof; wherein an alkaline neutralizer is present during the polymerization to neutralize at least 30 percent, based on equivalents, of the acid groups of the unsaturated carboxylic acid monomers present; and wherein an in-process solids level is from 40 to 70 percent, based on the weight of solid reactants relative to the combined weight of solid reactants and water at the end of the polymerization."

Dependent Claims 2 to 5, and 6 to 14 corresponded to granted Claims 2 to 5, and 7 to 15, respectively.

The Respondent argued essentially as follows:

(i) Document D11 showed that Example 21 of D1 did not produce phosphonate terminated polymers. Furthermore in Example 21, maleic acid was not metered into the polymerization reactor comprising 25 to 100 % by weight of the phosphorous acid.

(ii) Examples 3 and 17 of D1 would not lead to phosphonated polymers but to unphosphonated oligomers.

(iii) Auxiliary request I was based on page 6, lines 15 to 16 and claims 9 to 10 of the published application.

(iv) Auxiliary request II was based on page 6, lines 15 to 16, and line 20 and claims 9 to 10 of the published application.

VIII. With its letter dated 18 January 2005, the Appellant submitted the following document:

D12: Declaration by Mr David Wilson, dated 18 January 2005.

IX. With its letter dated 18 January 2005, Opponent II informed the Board that it would not be represented at the oral proceedings scheduled to take place on 19 January 2005.

X. Oral proceedings were held on 19 January 2005, in the absence of Opponent II.

(i) At the oral proceedings the discussion was firstly essentially focussed on the allowability of the amended set of claims, on which the Opposition Division had decided to maintain the patent in suit, under Article 123(2) and 123(3) EPC.

In that respect, both Parties, while essentially relying on their arguments presented during the written procedure, they made further submissions which could be summarized as follows:

(i) By the Respondent:

(i.1) The wording "and/or" was supported by original Claims 9 to 10, and 14 to 15.

(i.2) In view of the apparent incompatibility between original Claim 1 and these claims, the skilled person would have referred to the original description.

(i.3) In view of page 3, lines 22-23, 24-25 and 54-55, and Examples 1 to 8 of the application as published it was implicit that the unsaturated carboxylic monomer could be a monocarboxylic acid or a dicarboxylic acid.

(ii) By the Appellant:

(ii.1) Contrary to the submissions of the Respondent there was no contradiction between original Claim 1 and Claims 9 to 10, and 14 to 15.

(ii.2) There was no support in the application as originally filed for the use of an unsaturated dicarboxylic acid alone, and the feature that an unsaturated dicarboxylic acid alone could be metered to the polymerization vessel containing the phosphorus acid. In the examples in which an unsaturated dicarboxylic acid had been used, this was in combination with an unsaturated monocarboxylic acid.

Following preliminary observations from the Board concerning the allowability under Articles 123(2) and 123(3) EPC of this set of claims, the Respondent indicated its intention to submit a further auxiliary request.

After an interruption of the proceedings, the Respondent submitted a new auxiliary request referred to as "first" auxiliary request, whose Claim 1 read as follows:

"A process for preparing phosphonate-terminated polymers having a weight average molecular weight of less than 20,000, comprising polymerizing monomers selected from one or more of unsaturated carboxylic acid monomers, unsaturated "non-carboxylic" acid monomers and unsaturated acid-free monomers, in the presence of (a) water, (b) one or more water-soluble initiators and (c) phosphorous acid or a salt thereof; wherein the unsaturated carboxylic acid monomers is selected from one or more of acrylic acid, methacrylic acid, crotonic acid, vinylacetic acid, maleic acid, maleic anhydride, 1,2,3,6-tetrahydrophthalic anhydride, 3,6-epoxy-1,2,3,6-tetrahydrophthalic anhydride, 5-norbornene-2,3-dicarboxylic anhydride, bicyclo[2.2.2]-5-octene-2,3-dicarboxylic anhydride, 3-methyl-1,2,6-tetrahydrophthalic anhydride, 2-methyl-1,3,6-tetrahydrophthalic anhydride, itaconic acid, fumaric acid, mesaconic acid, citraconic acid and alkali metal and ammonium salts thereof; wherein from 75 to 100 percent by wt of the unsaturated acid monomers or salts thereof and the one or more water-soluble initiators, including, if any, 75 to 100 percent by weight of the unsaturated monocarboxylic acid monomers and water-soluble salts thereof, are metered into a polymerization reactor containing water and from 25 to 100 percent by weight of the phosphorous acid or salts thereof; wherein an alkaline neutralizer is present during the polymerization to neutralize at least 30

percent, based on equivalents, of the acid groups of the unsaturated carboxylic acid monomers present; and wherein an in-process solids level is from 40 to 70 percent, based on the weight of solid reactants relative to the combined weight of solid reactants and water at the end of the polymerization."

The discussion was then essentially concentrated on the admissibility of the auxiliary requests. The arguments presented by the Parties in that respect may be summarized as follows:

(a) By the Appellant:

(a.1) The auxiliary requests I to III, and the "first" auxiliary request had been submitted at a very late stage.

(a.2) No justification had been given by the Respondent for their very late filing.

(a.3) The arguments concerning the objections under Article 123(2) and 123(3) EPC against the set of claims allowed by the Opposition Division had been submitted and detailed at the beginning of the appeal proceedings.

(a.4) These requests were at first glance not clearly allowable. They all contained the possibility for an unsaturated dicarboxylic acid to be metered alone to the polymerization vessel.

(a.5) Thus, they should not be admitted into the proceedings.

(b) By the Respondent:

(b.1) The Opposition Division had considered that the set of claims met the requirements of Article 123 EPC. The incorporation of the wording "and/or" had been accepted by the Examining Division. Its allowability had been confirmed by the Opposition Division.

(b.2) No communication had been issued by the Board on that respect before the oral proceedings.

(b.3) The Respondent had been surprised by the considerations raised by the Board under Article 123 EPC.

(b.4) Thus, although the "first" auxiliary request had been submitted at a very late stage, it should be admitted into the proceedings.

(b.5) Furthermore, it was clear that the wording "and/or" was supported by the original application documents, so that the use of an unsaturated dicarboxylic acid alone was part of the original disclosure.

XI. The Appellant requested that the decision under appeal be set aside and the patent be revoked.

The Respondent requested that the appeal be dismissed or, in the alternative that the decision under appeal is set aside and the patent be maintained on the basis of the first auxiliary request filed during the oral proceedings (consisting of cl. 1 as presented during the oral proceedings and cl. 2 to 15 as granted) or on

the basis of one of auxiliary requests I to III filed with letter dated 12 January 2005.

Opponent II made no request.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. *Article 123(2) EPC:*

- 2.1 Claim 1 of the set of Claims, on the basis of which the Opposition Division has decided to maintain the patent in suit differs from Claim 1 as originally filed in that the term "and" has been replaced by "and/or" in the expression "the unsaturated carboxylic acid monomers comprise monocarboxylic acid monomers **and** (emphasis by the Board) unsaturated dicarboxylic acid monomers", and (ii) in that the feature "wherein 75 to 100% by weight unsaturated monocarboxylic acid monomers are metered into a polymerization reactor containing water and from 25 to 100% by weight of phosphorous acid or salts thereof" has been replaced by the feature "wherein 75 to 100% by weight unsaturated acid monomers or salts thereof and the one or more water-soluble initiators are metered into a polymerization reactor containing water and from 25 to 100% by weight of phosphorous acid or salts thereof".

- 2.2 It is firstly noted by the Board that an objection under Article 100(c) EPC has been raised by Opponent I

- (Appellant) in its letter dated 18 July 2002 in view of the presence of the term "and/or" in granted Claim 1 and that this point has been dealt with in the appealed decision.
- 2.3 This has for its consequence that the assessment of the allowability of Claim 1 under Article 123(2) EPC is not limited to that of the amendments made during the opposition and/or opposition appeal proceedings (G 9/91 OJ EPO, 1993, 403; Reasons points 18 and 19), and that amendment (i) is open to an objection under Article 123(2) EPC.
- 2.4 There can be no doubt that amendment (i) aims to disconnect the presence of an unsaturated dicarboxylic acid from that of an unsaturated monocarboxylic acid in the carboxylic acid monomer, and that it has for its consequence that the subject-matter of Claim 1 encompasses the metering of 75 to 100% of unsaturated dicarboxylic acids into the polymerization reactor containing water and from 25 to 100 percent by weight of the phosphorous acid or salts thereof.
- 2.5 In that respect, it is evident, in the Board's view, that the application as originally filed provides neither an explicit support for the incorporation of the term "or", nor for its consequential effect on the claimed subject-matter, since original Claim 1 and passage from page 2, lines 56 to page 3, line 13 of the published application (so called "Statement of the invention") clearly mention that the unsaturated carboxylic monomers comprise unsaturated monocarboxylic acids **and** unsaturated dicarboxylic acids, and that 75 to 100 percent by weight of the unsaturated

monocarboxylic acid monomers are metered into the polymerization reactor containing water and from 25 to 100 percent by weight of the phosphorous acid or salts thereof, and since the passage on page 6, lines 15 to 16 discloses only that from 75 to 100% of the **unsaturated acid** monomers or salts thereof are fed into the reactor (emphasises by the Board).

2.6 Nor could lines 22 to 23 on page 3 of the published application, although mentioning the term "or", provide an explicit support for this amendment, since they do not refer to the unsaturated carboxylic acid monomers but merely to the unsaturated acid monomers.

2.7 The same conclusion is valid for Examples 1 to 8 which relate only to the use of a specific unsaturated monocarboxylic acid (acrylic acid) and which, thus, cannot provide an explicit basis for the generalization to the use of unsaturated monocarboxylic acids as only unsaturated carboxylic acid monomer, let alone to the use of unsaturated dicarboxylic acids as only unsaturated carboxylic acid monomers (cf. also T 614/90 of 25 February 1994 (not published in OJ EPO); Reasons point 6).

2.8 Thus, it remains to be examined whether amendment (i) can be directly and unambiguously derived from the implicit disclosure of the application as originally filed, taking into account, as indicated in the decision T 383/88 of 1 December 1992 (not published in OJ EPO; Reasons point 2.2.2), that the slightest doubt as to the derivability of the amendment from the unamended document would rule out the amendment.

2.9 When trying to justify the incorporation of the term "or" in the definition of the unsaturated carboxylic acid monomers, the Respondent submitted that there was a contradiction between original Claim 1 and original Claims 9, 10, 14 and 15 since Claim 1 requires the presence of both an unsaturated monocarboxylic acid and an unsaturated dicarboxylic acid in the unsaturated carboxylic acid monomer, while Claims 9, 10, 14 and 15 refer to the use of one or more of unsaturated monocarboxylic and dicarboxylic acid monomers, and that in view of this contradiction the skilled person would have referred to the description in order to resolve it, and consequently, that, in view of the description (page 3, lines 22-23, lines 24-26, lines 54-55, Examples 1 to 8) it would have directly and unambiguously deduced that the unsaturated carboxylic acid monomers comprise unsaturated monocarboxylic acids and/or unsaturated dicarboxylic acids.

2.10 In view of the very strict standard for the allowability of amendments set out in paragraph 2.8 above, this will, in the present case, presuppose, that there cannot be the slightest doubt whether Claim 1 as originally filed was totally inconsistent with original Claims 9, 10, 14 and 15, and, that, consequently, in view of the description, there cannot be the slightest doubt that the term "or" was inherently intended in the definition of the unsaturated carboxylic acid monomers.

2.11 In this connection, the Board notes that original Claims 9, 10, 14 and 15 were dependent on original Claim 1 and that, consequently, these claims must primarily be interpreted as not having a broader scope

than the claim on which they depended (Rule 29(3) EPC), i.e. in the framework of Claim 1.

2.12 On that basis, since original Claim 1 requires that the unsaturated monocarboxylic monomers comprise unsaturated monocarboxylic and dicarboxylic acid monomers, Claims 9 and 10 can be interpreted as further requiring that one or more unsaturated monocarboxylic **and** (emphasis by the Board) unsaturated dicarboxylic acid monomers be present in an amount of at least 20 weight percent (Claim 9) or in amount from 25 to 90 weight percent (Claim 10). Hence, there is a reasonable doubt as whether an inconsistency arises between original Claim 1 and both original Claims 9 and 10.

2.13 One also comes to the same conclusion for original Claims 1 and 14 to 15, since, in the framework of Claim 1, these claims can be interpreted as merely exemplifying the unsaturated monocarboxylic acid(s) and the unsaturated dicarboxylic(s) acid which may be used in the unsaturated carboxylic acid monomers as defined in Claim 1.

2.14 Furthermore the alleged inconsistency in the original claims does not become less questionable in view of the references made by the Respondent to the original description, since,

(a) the passages referred by the Respondent (i.e. page 3, lines 22-23, lines 24 to 26, and 54 to 55 of the published application) belong to the "detailed" part of the description, which should, in principle, be read in conjunction with its general disclosure, i.e. in the light of the summary of the invention (cf.

page 2, line 56 to page 3, line 13; cf. also paragraph 2.5 above);

(b) lines 22 to 23 on page 3 do not refer to the unsaturated carboxylic acid monomers but to the unsaturated acid monomers;

(c) lines 24 to 26 on page 3 merely list the components which may be used in the unsaturated carboxylic acid component and the fact that this passage also refers to monomers having more than 2 carboxylic acid groups cannot be seen as being in contradiction with Claim 1, because the term "comprise" used in that claim does not exclude the presence of further unsaturated carboxylic acid compounds (e.g. polyacids); and

(d) lines 54 to 55 on page 3 of the published represent only the counterpart of original Claim 14.

2.15 Furthermore, the fact that Examples 1 to 8 illustrate the use of an unsaturated monocarboxylic acid cannot amount to the indisputable proof that the wording "or" was originally unambiguously intended, firstly because the remaining Examples 9, 10, and 11 are clearly in accordance with original Claim 1, secondly because these examples might at most have shown that the use of unsaturated monocarboxylic acids alone was intended but in no case that the use of unsaturated dicarboxylic acids alone was also intended, and thirdly because it would remain open whether it was the Examples 1 to 8 which were not in accordance with the wording of the claims or whether it was the wording of the claims which was not in accordance with these examples.

2.16 In view of the above, the Board can only come to the conclusion that the introduction of the term "or" in the definition of the unsaturated carboxylic acid monomer cannot be directly and unambiguously derived, whether explicitly or implicitly, from the application documents as originally filed. Consequently amendment (i) contravenes Article 123(2) EPC.

2.17 Although for this reason alone, the main request as a whole must be refused, the Board deems it appropriate to also deal with considerations under Article 123(3) EPC, to the extent that this issue was raised and substantiated by the Appellant in its Statement of Grounds of Appeal, i.e. at the very beginning of the appeal proceedings (letter of 28 February 2003).

3. *Article 123(3) EPC*

3.1 Claim 1 differs from Claim 1 as granted in that the feature "wherein 75 to 100% by weight of the unsaturated monocarboxylic acid monomers are metered into a polymerization reactor containing water and from 25 to 100% by weight of the phosphorous acid or salts thereof" has been replaced by the feature "wherein 75 to 100% by weight of the unsaturated acid monomers or salts thereof and the one or more water soluble initiators are metered into a polymerization reactor containing water and from 25 to 100% by weight of phosphorous acid or salts thereof".

3.2 It is thus evident that the incorporated feature according to which 75 to 100% by weight of the unsaturated acid monomers or salts thereof are metered into a polymerization reactor containing water and from

25 to 100% by weight of the phosphorous acid or salts thereof, merely refers to the total amount of unsaturated acid monomers to be metered but that this feature puts no specific restriction on the amount of unsaturated monocarboxylic acid to be metered into the polymerization reactor.

3.3 This has for its consequence, that, according to Claim 1, the amount of unsaturated monocarboxylic acid metered into the polymerization reactor can be lower than 75% by weight in contrast to what was previously required by granted Claim 1.

3.4 Thus, the scope of Claim 1 inevitably extends beyond the scope of granted Claim 1 contrary to the requirements of Article 123(3) EPC.

Auxiliary requests:

4. *Admissibility*

4.1 As indicated in "Guidance for parties to appeal proceedings and their representatives" (OJ EPO, 1996, pages 342-356; point 3.3), if a Party wishes to submit amendments to the patent documents in appeal proceedings, this should be done as early as possible.

4.2 While it is true that Rule 57a EPC does not contain any time limit for filing amendments (see T 577/97 of 5 April 2000 (not published in OJ EPO), Reasons point 3), it should be borne in mind, as further indicated in the above mentioned information, that the board concerned may disregard amendments which are not submitted in good time prior to oral proceedings, as a

rule four weeks before the date set for oral proceedings.

- 4.3 In the present case, auxiliary requests I to III have been submitted by the Respondent with its letter dated 12 January 2005 only one week before the oral proceedings, and the "first" auxiliary has been submitted even later, i.e. at the oral proceedings before the Board.
- 4.4 It is also established that the objections under Article 123(2) EPC and 123(3) EPC against the set of claims maintained by the Opposition Division had already been known to the Respondent at the very beginning of the appeal proceedings with the Statement of Grounds of Appeal submitted on 28 February 2003 by the Appellant i.e. nearly two years before the oral proceedings before the Board, so that the Respondent has had ample opportunity to submit amended sets of claims in order to respond to these objections.
- 4.5 When trying to justify the late filing of its auxiliary requests, the Respondent argued that the allowability under Article 123(2) EPC of the incorporation of the wording "or" in the definition of the unsaturated carboxylic monomers had been acknowledged by the Examining Division and further confirmed by the Opposition Division, that the compliance with Article 123(3) EPC of Claim 1 of the main request had never been questioned by the Opposition Division, and further that no communication had been issued by the Board before the oral proceedings.

- 4.6 In that respect, the Board notes, firstly, that there is no obligation for the Board to issue a communication before the oral proceedings (cf. Article 11 of the Rules of procedure of the Boards of Appeal), and, secondly, that the purpose of the appeal procedure is mainly to give the losing party (in that case Opponent I) the possibility to challenge the decision of the Opposition Division on its merits (cf. G 9/91, Reasons point 18), so that it should be expected that the Board, having heard the submissions of the Parties, may come to a different conclusion than the first instance.
- 4.7 Consequently, there is, in the Board's view, no circumstance justifying the filing of the auxiliary requests at such a late stage of the proceedings, and the Board can only find that the Respondent, although duly informed (cf "Guidance for parties to appeal proceedings and their representatives") of the risk of having late requests been disregarded by the Board, failed to take up the opportunity to submit amended sets of claims in order to respond to these objections under Article 123 EPC in good time before the oral proceedings.
- 4.8 Furthermore, it is evident from the mere reading of the respective Claim 1 of auxiliary requests I to III, that Claim 1 of these requests, as Claim 1 of the main request, no longer contains the limitation present in granted Claim 1 concerning the amount of unsaturated monocarboxylic acid to be metered in the polymerization reactor. From the mere reading of Claim 1 of the "first" auxiliary request, it is also evident, that this claim, despite the detailed listing of unsaturated monocarboxylic acid and unsaturated dicarboxylic acid

incorporated therein, fails to reintroduce the necessary combination of unsaturated monocarboxylic acid with unsaturated dicarboxylic acid as required in original Claim 1, and, hence, that it suffers from the same deficiency as Claim 1 of the main request.

4.9 Thus, taking into consideration that there was no real justification for the late filing of the auxiliary requests by the Respondent, and that these auxiliary requests quite evidently cannot, for the reasons given in paragraph 4.8 above, serve the purpose of meeting the well founded objections under Article 123 EPC raised by the Appellant against the main request, this situation justifies the Board to exercise its discretion not to admit them into the proceedings.

4.10 Hence, auxiliary requests I and III and the "first" auxiliary request are not admitted into the proceedings.

5. Consequently, in the absence of any allowable request, the patent must be revoked.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:

E. Görgmaier

R. Young