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Anmeldenummer / Filing No / N° de la demande : 81 107 193.5

Veröffentlichungs-Nr. / Publication No / N° de la publication : 0 047 999

Bezeichnung der Erfindung: Aromatic amorphous thermoplastic polymers

Title of invention:

Titre de l'invention :

Klassifikation / Classification / Classement : C 08 G 75/23

ENTSCHEIDUNG / DECISION

vom / of / du 11 December 1986

Anmelder / Applicant / Demandeur : AMOCO CORPORATION

Patentinhaber / Proprietor of the patent /

Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence : Alternative claims/AMOCO CORPORATION

EPO/EPC/CBE Articles 54, 108, 110, 111

R 86(3)

Kennwort / Keyword / Mot clé : Alternative claims newly submitted at oral hearing as main request - abuse of procedure - main request rejected because filed late and not clearly allowable
Novelty - construction of a single prior document in the light of a reference document - confirmation of the principle of consideration of a citation in isolation

Leitsatz / Headnote / Sommaire

- I. If an appellant desires that the allowability of alternative sets of claims should be considered in an appeal, such alternative claims should normally be filed with the statement of grounds of appeal or as soon as possible thereafter.
- II. When deciding an appeal during oral proceedings, a Board of Appeal may refuse to consider alternative claims which have been filed at a late stage, e.g. during the oral proceedings, if such claims are not clearly allowable.

.../...

III. When assessing novelty, the disclosure of a prior document must be considered in isolation. It is only the actual content of a document (as understood by a skilled man) which destroys novelty.

IV. A prior document may on its proper construction (i.e. when its meaning to the skilled man is determined) incorporate part or all of a second prior document into its disclosure, by specific reference to the second document.

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Chambres de recours



Case Number : T 153/85

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 11 December 1986

Appellant : AMOCO CORPORATION
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Representative : Weinhold, Peter, Dr.
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Decision under appeal : Decision of Examining Division 012 of
the European Patent Office dated
22 January 1985 refusing European
patent application No. 81 107 193.5
pursuant to Article 97(1) EPC.

Composition of the Board :

Chairman : K. Jahn
Member : C. Gerardin
Member : G. D. Paterson

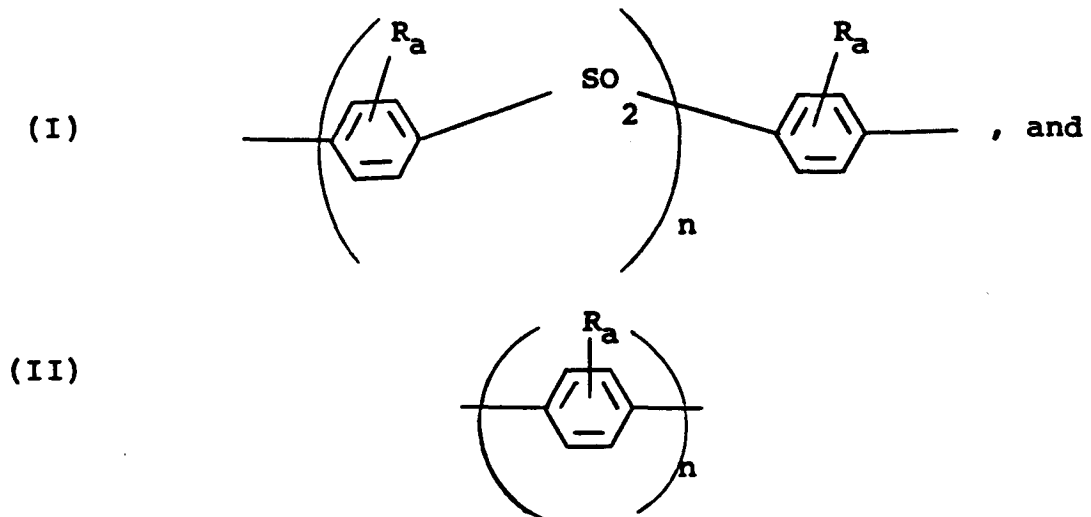
Summary of Facts and Submissions

- I. European patent application No. 81 107 193.5, filed on 11 September 1981, claiming the US priority of an earlier application filed on 12 September 1980 and published under number 47999 was refused by a decision of the Examining Division dated 22 January 1985.

- II. The decision was based on the grounds that the subject-matter of Claim 1 was not novel with regard to the teaching of EP-A1-8894 (1).

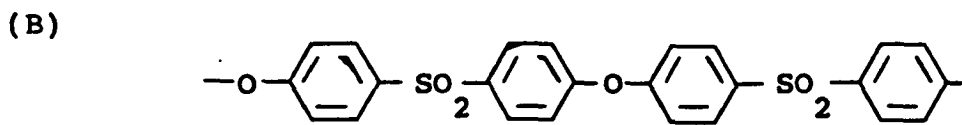
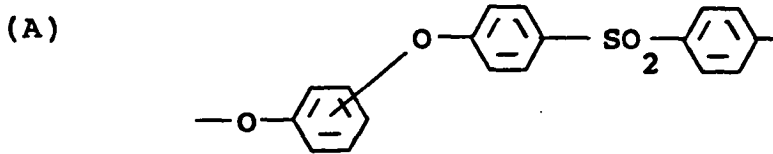
The application contained 5 claims, of which Claim 1 reads as follows:

"An amorphous thermoplastic polymer containing units of the formula:



wherein R is independently hydrogen, C₁ to C₆ alkyl, or C₄ to C₈ cycloalkyl, a is independently an integer of 0 to 4 and n is independently an integer of 1 to 3; said units (I) and (II) being attached to each other by an -O- bond, the ratio of unit (I) to unit (II) being in the range of from 55:44 to 95:5".

III. In the decision it was stated that document (1) discloses polyarylethersulphones which are suitable for further sulphonation and which comprise recurrent units A and B of the following formulae:



A simple conversion of (A) : (B) molar ratios into (I):(II) ratios, wherein (I) and (II) are the recurrent units of the polymers according to the application, shows that the document (1) describes not only a polymer having the most simple recurrent units of the claimed polymers, but also five specific molar ratios distributed throughout the claimed range.

The decision further stated that although document (1) did not mention the amorphous thermoplastic properties of the polymers, it referred to a process of preparation described in CA-A-847963 (7) which was the same as in the application. The conclusion was therefore that the prior art products disclosed in (1) and the claimed polymers had to be substantially identical in nature, i.e. that the amorphous thermoplastic properties could not be regarded as distinguishing features.

The decision concluded by stating that upon consideration of the whole technical content of the application, it did not appear that any kind of alteration to the claims would provide patentability.

- IV. On 22 March 1985 the Appellant filed a notice of appeal against the decision to refuse the application, and paid the fee for appeal.

The notice of appeal requested that the decision at first instance be cancelled in its entirety, and that a patent be granted based on the claims then on file, and requested oral proceedings if that was not possible.

On 28 May 1985 the Appellant filed a statement of grounds of appeal together with a request for consideration of two new sets of claims. The first set of claims was directed to "An amorphous thermoplastic polymer" and corresponded to those claims which were the subject of the decision at first instance, except that in Claim 1 the 5 specific molar ratios disclosed in document (1) were specifically excluded and therefore disclaimed. The second set of claims was an alternative set which also corresponded to those which were the subject of the decision, except that each was directed to the "use" of the defined polymer "for the production of moulded articles".

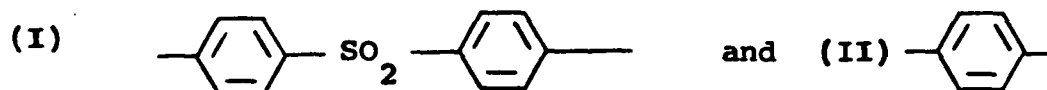
The statement of grounds of appeal contained arguments suggesting novelty and inventiveness for each set of claims.

Oral proceedings were arranged for 11 December 1986, by a summons dated 14 October 1986.

By letter dated 24 November 1986 and received in the EPO on 26 November 1986 a further (third) set of 5 claims was filed. This third set of claims was also directed to the use of the defined polymers "for the production of moulded articles", and included other restrictions. At the request of the Appellant, the allowability of this third set of claims having regard to Article 123 EPC was considered during the oral hearing. Also during the oral hearing, the Appellant proposed a further alternative (fourth) set of 2 claims. The Appellant requested this fourth set of claims as his main request, and the third set of claims as his auxiliary request. The third set was amended and reduced to 3 claims as a result of the Board's observations having regard to Article 123 EPC.

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

"Melt and oxidative stable amorphous thermoplastic polymer having a reduced viscosity of about 0.4 to about 2.5 containing units of the formula:

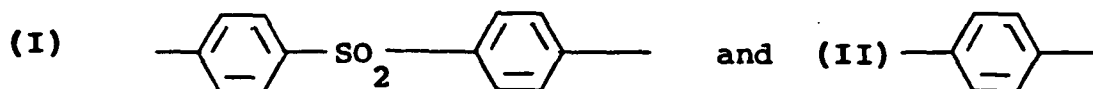


said units (I) and (II) being attached to each other by an -O-bond and the ratio of unit (I) to unit (II) being in the range of from 55:45 to 95:5 and stabilized by the reaction with an activated aromatic halide or an aliphatic halide."

Claim 2 is dependent upon Claim 1, and requires the molar ratio (I):(II) to be in the range of from 70:30 to 85:15.

(ii) Claim 1 of the auxiliary request reads as follows:

"Use of an amorphous thermoplastic polymer containing units of the formula:



said units (I) and (II) being attached to each other by an -O-bond and the ratio of unit (I) to unit (II) being in the range of from 55:45 to 95:5 for the production of compression moulded articles."

Claim 2 is directed to the same preferred range for the molar ratio (I):(II) as Claim 2 of the main request and Claim 3 is directed to the use of a specific polymer.

V. The essence of the arguments submitted in the statement of grounds of appeal and during the oral proceedings can be summarized as follows:

(i) The subject-matter of the claims in the main request should be novel since document (1) does not mention the melt and oxidative stability, the amorphous properties or the reduced viscosity of the known polymers; nor does (1) specify that the polymers are stabilized by reaction with an activated aromatic or aliphatic halide.

An inventive step should be acknowledged as well since the surprising and valuable properties cannot be deduced from this citation.

(ii) The use of the polymers for the production of compression moulded articles according to the claims in the auxiliary request is novel since the polymers described in (1) only serve as starting materials for

the preparation of sulphonated polymers. An inventive step should be acknowledged as well since the claimed polymers are superior in several respects to polymers which show a structural resemblance.

- VI. The Appellant requested that the decision of the Examining Division be set aside and the grant of a patent on the basis of the set of claims in the main request or, alternatively, on the basis of the set of claims in the auxiliary request.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is therefore admissible.
2. The first question to be decided in relation to the sets of claims in the main request and the auxiliary request is whether such claims should be admitted for consideration in this appeal.
 - 2.1 Admissibility of the main request.

As is apparent from paragraph IV above, Claim 1 of the main request was filed for the first time at the oral proceedings on 11 December 1986: that is, more than eighteen months after the statement of grounds of appeal was filed. Its subject-matter differs in various aspects from Claim 1 of the first set of claims which was filed with the grounds of appeal. The admissibility of the main request raises a point of principle.

In relation to appeal proceedings, the normal rule is as follows: If an appellant wishes that the allowability of the alternative set of claims, which differ in subject-

matter from those considered at first instance, should be considered (both in relation to Article 123 EPC and otherwise) by the Board of Appeal when deciding on the appeal, such alternative sets of claims should be filed with the grounds of appeal, or as soon as possible thereafter.

When deciding on an appeal during oral proceedings, a Board may justifiably refuse to consider alternative claims which have been filed at a very late stage, for example during the oral proceedings, if such alternative claims are not clearly allowable.

The reason for this normal rule is as follows:

- (a) The procedure in relation to the consideration of an appeal by a Board of Appeal is set out in Articles 108, 110 and 111 EPC. In particular, Article 108 EPC requires "a written statement setting out the grounds of appeal" to be filed within four months after the date of notification of the decision under appeal. The essential contents of this statement of grounds of appeal have been recently discussed in decisions of the Boards of Appeal (see in particular J 22/86, "Disapproval/Medical Biological" dated 7 February 1987, to be published, and T 220/83, "Grounds for Appeal"/HÜLS, OJ EPO 8/1986, 249).

From these decisions, it is clear that the appellant is required to set out in his grounds of appeal the reasons why the appeal should be allowed.

The next stage is the examination of the appeal, under Article 110 EPC. During this stage, as Article 110(1) and (2) EPC makes clear, it is on the basis of the

grounds of appeal that an appellant may be invited by the Board to file observations, within a certain period of time. When filing such observations within the time limit, it may sometimes be appropriate for alternative claims to be submitted for consideration, in response to the communication from the Board.

In cases where oral proceedings are to take place, such oral proceedings are arranged to take place when the examination under Article 110(2) EPC is substantially complete.

The appeal procedure of Articles 108, 110 and 111 EPC is designed to ensure that as far as possible the oral proceedings are brief and concentrated, and that the appeal is ready for decision at the conclusion of the oral proceedings. Alternative claims ought to be submitted for consideration during the stage of examination of the appeal, which is primarily conducted by the rapporteur. The filing of alternative claims at a later point in time, such as during the oral proceedings, when the examination stage has been substantially completed, is contrary to the prescribed procedure. Consideration of alternative claims is properly the subject of the examination stage, because time for study is commonly required. The submission of alternative claims at an oral proceeding is liable to disrupt it, which is clearly undesirable.

- (b) The above principles were set out clearly and concisely in the "Guidance for appellants and their representatives", issued by the EPO and published twice in the Official Journal (OJ EPO 6/1981, 176 and OJ EPO 8/1984, 376). At paragraph 2.2 "Submission of Amendments", it is stated that "If it is desired to

submit amendments to the description claims or drawings of a patent application in an appeal proceeding, this should be done at the earliest possible moment". It is further stated that "the Board may ... disregard amendments which, ... when a date for oral proceedings has been given, are not submitted in good time before the proceedings".

These statements refer specifically to the submission of amendments, but are clearly applicable to the submission of alternative sets of claims by way of auxiliary requests. An auxiliary request is a request for amendment which is contingent upon the main request being held to be unallowable.

- (c) In Decision T 95/83, "Late submission/AISIN", OJ EPO 3/1985, 75, the Board of Appeal stated "that it is only in the most exceptional cases, where there is some clear justification both for the amendment and for its late submission, that it is likely that an amendment not submitted in good time before oral proceedings will be considered on its merits in those proceedings by a Board of Appeal". While this decision was taken in the context of its particular facts, the above statement is clearly aimed at avoiding abuse of the appeal procedure as discussed above.
- (d) The discretionary power of a Board of Appeal during any appeal proceeding to disregard such late-filed requests for amendment derives from the obligation to decide the appeal as set out in Article 111(1) EPC.

The second sentence of Article 111(1) EPC specifically provides that when deciding on an appeal, "The Board of Appeal may.... exercise any power within the competence

of the department which was responsible for the decision appealed ...". Clearly both the Examining Division and the Opposition Division exercise a discretionary power in relation to requests for amendment in proceedings before them, having regard to the context of such proceedings. Similarly, a Board of Appeal exercises its discretionary power having regard to the particular context of the appeal proceedings, in the manner already discussed.

- (e) In all normal circumstances, an appellant has ample time and opportunity, both during the proceedings at first instance and during the appeal proceedings, to consider and formulate the full range of claims that he may desire, well prior to the oral hearing. Therefore the closer to the oral hearing that alternative claims are filed, the greater the risk that they will be disregarded. However, in principle, having regard to the particular circumstances of a particular case, a Board may exceptionally decide to consider late-filed claims, provided both the Board and all parties to the appeal proceedings have sufficient opportunity to give all necessary consideration to the allowability of such claims.

- 2.2 In the present case, having regard to what is set out above, the Board rejects the main request of the Appellant, having regard to the fact that it was filed during the oral proceedings without any proper justification for such late filing; and also (in this particular case) having regard to the Board's view, set out below, that the claims set out therein clearly do not satisfy Article 52(1) EPC.

2.3 Admissibility of auxiliary request.

As stated in paragraph IV above, this set of claims was in fact filed about two weeks before the oral proceedings, and in the circumstances of the case the Board decided during the oral proceeding to admit the auxiliary request for its consideration.

3. Allowability of amendments in main and auxiliary requests.

There are no formal objections on the basis of Article 123 EPC to the two sets of claims in the main and auxiliary requests since all such claims are adequately supported by the original description.

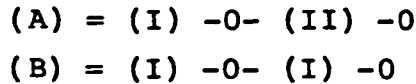
As far as Claim 1 of the main request is concerned, it is specified (page 9, paragraph 2) that when the polymer is treated with an activated aromatic halide or an aliphatic halide, this results in a polymer having good melt and oxidative stability. The reduced viscosity of from about 0.4 to about 2.5 is mentioned on page 5, first paragraph. As to the recurrent units they correspond to the preferred units disclosed on page 4, lines 27 to 38.

The use of the polymer for the production of compression moulded articles according to the second set of claims is mentioned on page 11, line 25 whereas the ratios of units (I) to units (II) in the range of from 55:45 to 95:5 are to be found on page 4, lines 24 to 26 and in Claim 5.

In both sets of claims the aromatic rings of the repeat units are unsubstituted; this was originally disclosed as the preferred embodiment on page 4, lines 27 to 39 and in Claims 2 to 4.

4. The main request - patentability.

4.1 Document (1) describes the preparation of polyarylethersulphone copolymers by controlled sulphonation of a copolymer whose recurrent units (A) and (B) can be expressed in terms of units (I) and (II) as follows:



The copolymer may contain 1 to 99 mole % of units (A) and 99 to 1 mole % of units (B), the preferred ranges being respectively 5 to 80 mole % and 95 to 20 mole % (page 2, lines 7 to 21). In the repeat unit (A) the ether linkages are para disposed (page 3, lines 15 to 22; Examples 1 to 5).

Following molar ratios are explicitly disclosed in examples 1 and 2:

- (A) % : 25, 25 to 66.7 (range), 80, 5, 90, 40
- (B) % : 75, 75 to 33.3 (range), 20, 95, 10, 60

Examples 3 and 4 further refer to already sulphonated copolymers; such products must have the same molar ratios of units (A) and (B) as the non-sulphonated copolymers, i.e.

- (A) % : 10, 20
- (B) % : 90, 80

The conversion of all these (A):(B) molar ratios into (I):(II) molar ratios gives following figures:

- (I) % : 99.5 97.5 95 90 80 87.5 to 66.7 60 55 50.5
- (II)% : 0.5 2,5 5 10 20 12.5 to 33.3 40 45 49.5

wherein the values 99.5 and 50.5 correspond to the limits of the broad range.

Besides the fact that the whole ranges (I):(II) varying from 99.5:0.5 to 50.5:49.5 and 87.5:12.5 to 66.7 : 33.3 are disclosed in (1) this table shows that the two limits of the range for the ratio (I):(II) are mentioned in (1) and that several values of this ratio fall within the claimed range.

This demonstrates that the whole range from 95:5 to 55:45 claimed by the present application is anticipated by the prior art.

- 4.2 Document (1) does not mention certain features in Claim 1, i.e. (i) the melt and oxidative stability, (ii) the amorphous properties or (iii) the reduced viscosity; nor does it specify that (iv) the polymers are stabilized after polycondensation by reaction with an activated aromatic halide or an aliphatic halide. All these features were incorporated in a claim for the first time in Claim 1 of the main request submitted during oral proceedings. It is thus crucial to demonstrate whether or not they reflect actual differences between the known polymers and the claimed polymers and thereby confer novelty.

It is specified in (1) that "Copolymers having the repeat units (A) and (B) may be conveniently prepared by condensation of the appropriate dihydroxyphenol (i.e. hydroquinone), 4,4'-dihydroxydiphenylsulphone and 4,4'-dichlorodiphenylsulphone, and an alkali metal carbonate or bicarbonate in the presence of a sulphone or sulphoxide solvent, using the method of preparing polyarylene polyethers described in CA-A-847963" (7) (see page 3, lines 15 to 22 of document (1)).

When assessing novelty, the disclosure of a particular prior document must always be considered in isolation; in other words it is only the actual content of a document (as understood by a skilled man) which destroys novelty. It is not permissible to "combine" separate items of prior art together. However, in a case such as the present, where there is a specific reference in one prior document (the "primary document") to a second prior document, when construing the primary document (i.e. determining its meaning to the skilled man) the presence of such specific reference may necessitate that part or all of the disclosure of the second document be considered as part of the disclosure of the primary document. In the present case, on the proper construction of document (1) (the primary document), the method of preparation described in document (7) has been incorporated by reference into the disclosure of document (1).

Furthermore, this method of preparation is exactly the process suitable to prepare the copolymers according to Claim 1 in the application (description, page 5, line 5 to page 9, line 9). The identity of the processes in the application and in documents (1) and (7) is clearly very relevant to the actual scope of the disclosure of (1) in relation to the above features of Claim 1 which are not specifically mentioned in document (1).

- 4.3 As to features (i) and (ii), document (1) is silent about the melt and oxidative stability and the amorphous properties of the polyarylethersulphones. However (7) mentions both oxidative and chemical stability in the specific case of the polymers according to Example 13. Although this cannot be objectively regarded as a general statement, in the absence of counterevidence it cannot be

disputed that identity of process features applied to identical starting compounds must result in identical final products; this can only mean that the polymers prepared according to the disclosure of (1) must inevitably have the above properties which are required in Claim 1 of the application in suit. The specification of these properties must thus be regarded as a series of merely descriptive features which cannot confer novelty upon the subject-matter of Claim 1.

- 4.4 As to feature (iii), reduced viscosity, even if the choice of the solvent used to measure the reduced viscosity does not affect substantially the limits of the range, it is self-evident that this solvent should have been identified in Claim 1, as in the description (page 5, lines 1 to 4).

No range for the reduced viscosity of the copolymers is disclosed in (7). The examples, however, disclose a series of values which, with the sole exception of Example 2, and whatever the solvent used to measure them, lie throughout the range defined in Claim 1 of the present application. Closer analysis shows that the influences on the reduced viscosity of variations in the process features applied to the same starting compounds (compare Examples 3 to 6) and of changes in the recurrent units (compare Examples 1, 2 and 11 to 13) are comparable. The polymers which are structurally the closest to the claimed polymers, i.e. the polymers prepared from 4,4'-dichlorodiphenylsulphone (Examples 11 to 13), have a reduced viscosity between 0.45 and 1.96; since a modification of the recurrent units of these polymers by as little as 5% would already lead to polymers falling within the scope of Claim 1, there is no doubt that the polymers described in (7) and consequently those described in (1) exhibit the required reduced viscosity.

This result was in fact to be expected since the reduced viscosity is a measure of the molecular weight which, all process features being the same, basically depends on the relative molar ratio of the reactants. The mere reference to polymers in the prior art and in the application suggests that molar ratios practically equal to 1 have been used for their preparation, that comparable molecular weights have been obtained, thus that comparable reduced viscosities can be measured. The range of reduced viscosity which appears in Claim 1 only corresponds to figures which are usual in the art and which are specifically disclosed in (1); thus there is no narrow selection from the disclosure of (1), and as such the claimed range cannot be regarded as a distinguishing feature over (1) such as to confer novelty upon Claim 1.

- 4.5 As to feature (iv): as stated in paragraph 4.2 above, the method of preparing polyarylene polyethers described in document (7) is incorporated by reference into document (1), in connection with the preparation of copolymers having the repeat units A and B. Part of the method of preparation described in document (7) involves controlling the molecular weight of the polymer. One of two specifically described methods of controlling the molecular weight involves "terminating the growing polymer chain by the addition of a monofunctional chain stopper such as an alkyl halide or other suitable coreactant" (page 11, lines 6 to 13). This method is specifically exemplified in Examples 3, 11 and 14 wherein methyl chloride is used. The other specifically described method of controlling molecular weight is said to be preferred for reasons connected with ease of purification of the polymer, but the use of a chain stopper is recommended as "beneficial in yielding a more stable polymer" (page 11, lines 14 to 20).

There is no doubt that the use of a chain stopper such as an alkyl halide is specifically disclosed as part of the method of preparation described in document (7).

Furthermore, as stated above this method of preparation is incorporated by reference into the disclosure of document (1). It therefore follows that document (1) discloses stabilisation of the reaction with an alkyl halide or other suitable reactant.

Thus this feature of Claim 1 is disclosed in document (1), on its proper construction.

4.6 In conclusion, in the judgement of the Board the disclosure of document (1), when interpreted in the light of the specific reference to document (7), destroys the novelty of the subject-matter of Claims 1 and 2, and these claims therefore are contrary to Articles 52(1) and 54(1) EPC.

4.7 Although in the present case the Board has given full reasons for rejecting the main request both as being inadmissible on the procedural ground of its late filing, and as being not allowable on the substantive ground of lack of novelty, in future the Board may reject a request as inadmissible, simply by applying the principles set out in Section 2 above.

5. The auxiliary request - patentability.

As far as the auxiliary request is concerned, novelty of the subject-matter of Claim 1 can be acknowledged.

The polymers prepared in (1) are further subjected to controlled sulphonation in order to confer on them a degree of hydrophilicity corresponding to a water absorption capacity at ambient temperature of about 2 weight % water absorption (page 2, lines 22 to 26).

Since, in the decision of the Examining Division the refusal of the application on grounds of lack of novelty was not accompanied by any reasoning and conclusion as to the question of inventive step, the case should be remitted to the Examining Division for further prosecution.

Order

For these reasons it is decided that:

1. The decision of the Examining Division is set aside.
2. The main request is rejected.
3. The case is remitted to the Examining Division for further substantive examination on the basis of Claims 1 to 3 of the auxiliary request submitted during the Oral Proceedings.

The Registrar



The Chairman



CG
HMP