

Veröffentlichung im Amtsblatt	Ja/ <del>Nein</del>
Publication in the Official Journal	Yes/ <del>No</del>
Publication au Journal Officiel	Oui/ <del>Non</del>

Aktenzeichen / Case Number / N<sup>o</sup> du recours : T 300/89 - 3.3.1

Anmeldenummer / Filing No / N<sup>o</sup> de la demande : 85 308 381.4

Veröffentlichungs-Nr. / Publication No / N<sup>o</sup> de la publication : 0 182 642

Bezeichnung der Erfindung: Ethylenically unsaturated polyesters  
Title of invention:  
Titre de l'invention :

Klassifikation / Classification / Classement : C08G 63/58

### ENTSCHEIDUNG / DECISION

vom / of / du 11 April 1990

Anmelder / Applicant / Demandeur : Minnesota Mining and Manufacturing Company

Patentinhaber / Proprietor of the patent /  
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Articles 54, 96, 113; Rules 51, 67

Schlagwort / Keyword / Mot clé : "Novelty (no) - product defined by a product-by-process claim involving three reactants without specific reaction conditions not novel with regard to prior art mentioning the same reactants" - "Rejection after one communication - request for telephone call left unanswered - no procedural violation".  
Leitsatz / Headnote / Sommaire

I. Even if it is possible for an Examining Division to envisage amendments which might enable progress towards grant, the burden lies upon an applicant (if he so wishes) to propose amendments (including by way of auxiliary requests) which overcome the objections raised by the Examining Division, in the observations in reply to the first communication under Article 96(2) EPC in which such objections are raised.

II. If an applicant wishes to avoid the risk of an adverse decision being issued without oral proceedings being appointed, he should request oral proceedings at the latest in his observations in reply to the first communication under Article 96(2) EPC.



Case Number : T 300/89 - 3.3.1

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.1  
of 11 April 1990

**Appellant :** Minnesota Mining and Manufacturing Company  
P.O. Box 33427  
St. Paul, Minnesota 55133-3427  
US

**Representative :** Baillie, Iain Cameron  
c/o Ladas & Parry  
Isartorplatz 5  
D-8000 München 2

**Decision under appeal :** Decision of Examining Division 012 of  
the European Patent Office dated  
28 November 1988 refusing European patent  
application No. 85 308 381.4 pursuant to  
Article 97(1) EPC

**Composition of the Board :**

**Chairman :** K. Jahn  
**Members :** C. Gérardin  
G. Paterson

Summary of Facts and Submissions

- I. The European patent application No. 85 308 381.4 filed on 18 November 1985, claiming priority of 21 November 1984 from an earlier application US 673 870 and published under the publication number No. 182 642, was rejected by a decision of the Examining Division dated 28 November 1988.

This decision was based on a set of 14 claims filed on 5 September 1988, wherein Claims 3 and 5 had been modified and unamended Claim 1 reads as follows:

"Ethylenically unsaturated polyester comprising the reaction product of (a) a polyhydroxy polyester which is the addition or condensation product of a saturated or unsaturated dicarboxylic acid and an acyclic or carbocyclic organic diepoxide, with (b) polymerizable ethylenically unsaturated compound having a functional group reactive with the hydroxyl groups of the polyhydroxy polyester, said ethylenically unsaturated polyesters having an equivalent weight of less than about 330 per ethylenic groups."

- II. The only ground for this decision was non-compliance with the requirements of Article 54 EPC with regard to the teaching of following document

(1) US-A-3 256 226.

More specifically, it was stated that Example 3 thereof disclosed the preparation of an ethylenically unsaturated polyester by reaction of (a) a polyhydroxy polyester which was the adduct of 0.5 mole of fumaric acid and 1 mole of diglycidyl ether of bisphenol A, with (b) 1 mole of methacrylic acid, the resulting product having a

calculated equivalent weight of 323 per ethylenic group. Although in the prior art epoxy groups were involved in the esterification step with methacrylic acid, this could not be regarded as a distinguishing feature since a carboxylic group was in principle capable of reacting with a hydroxy group.

Besides this substantive argumentation it was mentioned in the decision of refusal that the amendments carried out in Claims 3 and 5 were apparently not supported by the application as filed, but that this item would not be pursued since the rejection was based on Claim 1 only.

Although the application was acknowledged to contain patentable matter in other claims, the refusal thereof after one communication only was regarded as justified, since the Applicant's argumentation in the reply filed on 5 September 1988 contradicted both the basic chemical principles and the content of the description of the application. Furthermore, further prosecution of the examination would not be compatible with the thorough, efficient and expeditious substantive procedure aimed at by the EPO.

III. A notice of appeal was lodged against this decision on 19 January 1989 with payment of the prescribed fee.

Together with the Statement of Grounds of Appeal filed on 29 March 1989 the Appellant (applicant) submitted two additional sets of claims B and C to be considered as auxiliary requests besides the original set of claims A maintained with the exception of two minor editorial amendments in Claim 1 as main request.

The scope of the claims of set B is substantially the same as the scope of the claims of set A; as far as Claim 1 is

concerned, the ethylenically unsaturated polyester is defined at the end of the claim as "having an ethylenic unsaturation equivalent weight of less than 330". In Claim 1 of set C the polyester is further defined as "incorporating pendant side chains which have polymerisable ethylenic unsaturation and are derived from said polymerisable ethylenically unsaturated compound".

IV. The arguments presented by the Appellant in his Statement of Grounds can be summarised as follows.

Regarding novelty, since Claim 1 of sets A and B is defined as a reaction product, this must involve a reaction between the hydroxy groups of the reaction product (a) and the reactive compound (b), which means that the claim should be interpreted as a product-by-process claim. This is certainly different from the mechanism mentioned in document (1) according to which in the second step the epoxy groups are esterified with methacrylic acid.

From a procedural point of view it was submitted that the refusal of the application in suit, which was acknowledged by the Examining Division to contain allowable claims, after only one communication, is a substantial violation of procedure, all the more as the Examining Division failed to telephone the applicant's representative as requested in the reply to this communication. The aim of the EPO to carry out a "thorough, efficient and expeditious" substantive examination could hardly be served by arbitrary refusal of an application in such circumstances. The refusal to continue the examination at such an early stage, and in a manner calculated to circumvent the Appellant's right to request oral proceedings, had not allowed a thorough investigation of the issues. The Examining Division had a joint

responsibility to co-operate with applicants in overcoming linguistic and other misunderstandings as to the true scope of the claims.

- V. The Appellant requested that the impugned decision be set aside, and that a patent be granted according to the set of claims A as main request, the set of claims B as first auxiliary request or the set of claims C as second auxiliary request, as well as the reimbursement of the appeal fee.

#### Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.

#### Main request and first auxiliary request

2. As the Appellant pointed out in the comments relative to the various requests (Statement of Grounds of Appeal, page 1), the scope of the claims of sets A and B, thus particularly of Claims 1, is substantially the same. The arguments concerning their allowability and patentability being the same, these two requests will thus be considered together.
3. The wording of the claims does not give rise to objections under Article 123(2) EPC.

The two amendments requested for Claim 1 of set A are merely of editorial nature; in fact, these two corrections are even supported by the original description wherein the singular form was used for both "polyester" and "group" (page 12, lines 22 and 24). As far as Claim 1 of set B is concerned, the expression "ethylenic unsaturation

equivalent weight of less than 330", which has the same meaning as the counterpart wording in Claim 1 of set A, corresponds exactly to the original description (page 3, lines 19 to 22).

For the purpose of the present decision it is not necessary to examine the allowability of the other amendments.

4. Document (1) describes the preparation of polymerisable polymers having terminal ethylenically unsaturated groups and including plural pendant hydroxy groups as well as plural ester linkages; this occurs by reaction of a diepoxy compound, a dicarboxylic acid and an ethylenically unsaturated monocarboxylic acid (column 1, lines 15 to 25). According to the preferred embodiment one mol of diepoxy compound is first reacted with 0.5 to 0.9 mol of dicarboxylic acid, the epoxy end groups of the resulting intermediate product being then esterified with the ethylenically unsaturated monocarboxylic acid which acts as a chain terminator providing the terminal unsaturation necessary for subsequent cross-linking (column 2, lines 37 to 64). It is undisputed that this intermediate product is a polyhydroxy polyester (a) within the meaning of Claim 1.

The particular polymer described in Example 3 is obtained from 1 mole of DER-332 as diepoxy compound identified as the adduct of epichlorohydrin and bisphenol A in the proportion of 2 to 1, 0.5 mol of fumaric acid and 1 mol of methacrylic acid. If one assumes that the three reactants react exactly stoichiometrically, as illustrated for the same epoxy resin, phthalic acid and acrylic acid used respectively in the same proportions (column 2, lines 26 to 36), the calculated equivalent weight per ethylenic group is 323. If, on the other hand, one takes into

account that the epoxy compound has an epoxy equivalent of 173 to 174 (column 7, line 67), which is slightly higher than the value obtained by dividing the molecular weight 340 by 2, the ethylenic unsaturation equivalent weight is in the range of 327 to 328. In either case, thus, the requirement of equivalent weight less than 330 per ethylenic group is met.

5. Since methacrylic acid is cited in the application in suit among the preferred compounds (b) to be used in the second step (page 12, line 28), the problem of novelty reduces to the question whether the mere specification that compound (b) has a functional group reactive with the hydroxy groups of the polyhydroxy polyester (a) can be regarded as a distinguishing feature over the prior art, wherein the same acid is known to react with the epoxy groups of the polymer chain in spite of the presence of such hydroxy groups.

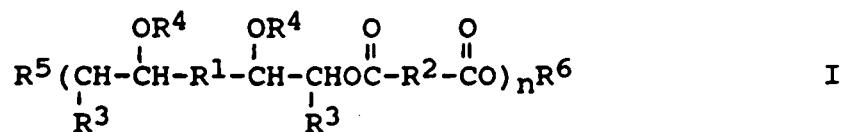
5.1 It is essential to appreciate that the formulation of Claims 1 is such that the reaction product (a) is only characterised by the presence of hydroxy groups. Although some of the diepoxides mentioned in the description (page 9, line 30 to page 10, line 25) already contain hydroxy groups, the hydroxy groups referred to in Claims 1 basically result from the esterification reaction between the diepoxide and the dicarboxylic acid. In the absence of the relative amounts of the two reactants as well as of any requirement of modification of the end groups of the reaction product (a), as specified as Claim 2, the latter may contain terminal epoxy groups or terminal carboxylic groups or even both, if stoichiometric amounts of the two reactants have been used; the intermediate products (a) encompassed within the scope of Claims 1 comprise thus, besides hydroxy groups, epoxy groups and/or carboxylic groups.



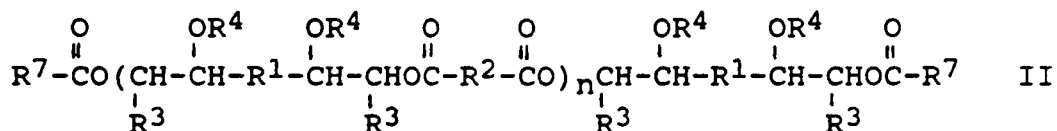
It is self evident that in the situation where the intermediate product (a) contains epoxy groups, methacrylic acid, although potentially reactive with hydroxy groups, is able to react with the oxirane rings under appropriate reaction conditions. This is actually the reaction which takes place according to document (1) (column 2, line 26 and column 6, line 60) as well as in the application in suit (page 8, lines 12 to 16 and scheme 3; page 11, line 20 to page 12, line 2; Claim 2 and Tables I and II) where, for the purpose of the preparation of the intermediate reaction product (a), a monocarboxylic acid, preferably acrylic or methacrylic acid, reacts selectively with epoxy groups in the presence of hydroxy groups. This means that the wording of Claims 1 not only encompasses structures for the reaction product (a) clearly not envisaged in the description, but also does not adequately specify the reaction conditions wherein methacrylic acid would have the desired reactivity. In other words, the content of Claims 1 corresponds to reaction conditions which are necessary, but not sufficient to carry out the invention, as it actually appears from the more specific description. The mere indication that the functional group of the unsaturated compound (b) should be reactive with the hydroxy groups of the reaction product (a) leaves thus open, whether this reaction, i.e. esterification of the hydroxy groups, actually takes place, or another reaction, i.e. esterification of the oxirane rings. Therefore, the criterion of reactivity is not a distinguishing feature with regard to the teaching of document (1). For this reason, the subject-matter of Claims 1 is anticipated by the disclosure of document (1).

5.2 The formulae of the ethylenically unsaturated polyesters envisaged by the Appellant in the description do not allow another conclusion.

From formula I corresponding to the broadest definition of these polyesters



as well as formula II corresponding to a preferred subclass of compounds



it appears quite clearly that, unlike the argument put forward repeatedly by the Appellant, the pendant groups R<sup>4</sup> may not add further unsaturation to that already provided by the catenary groups R<sup>1</sup> and R<sup>2</sup>, since there is no such restrictive condition that at least one of the radicals R<sup>4</sup> has to be ethylenically unsaturated. On the contrary, the meaning of radicals R<sup>5</sup>, R<sup>6</sup> and R<sup>7</sup> is such that these terminal radicals may all be unsaturated and thus contribute to the unsaturation of the polyesters. This would correspond to a straight polymer chain without lateral unsaturation, which is nothing else than the linear formula specified in document (1). This confirms that the prior art teaching is encompassed within the scope of Claims 1.

5.3 The comparative example provided by the Appellant (Statement of Grounds of Appeal, point 5) has to be considered bearing in mind the breadth of Claim 1.

It is not disputed that the product described in document (1) used for comparative purposes has a basically linear structure which is responsible for the poor properties of the coating made therefrom, whereas the polymer disclosed in the examples of the application in suit contains side unsaturations which enable subsequent cross-linking. However, as stated above, this specific structure is not necessarily obtained if one follows the teaching of Claims 1; therefore, the superior qualities of the coating achieved in the examples of the application in suit, which require the reactants to be used in molar ratios within relatively narrow ranges (Tables I and II), cannot provide evidence of the same qualities for coatings made from any polymer within the scope of Claim 1. Consequently, the comparative example submitted by the Appellant cannot be used to demonstrate novelty by means of inferior properties in the prior art.

Nor can the argument of the formation of side products wherein the terminal methacrylate groups would be bonded only to the diepoxide moieties as the result of direct esterification of the oxirane rings of the diepoxide compound with methacrylic acid when the three ingredients - diepoxide, dicarboxylic acid and methacrylic acid - are added simultaneously, be accepted. First of all, the prior art document clearly specifies that the unsaturated monocarboxylic acid serves as chain terminator, whether this acid is added together with the other two reactants or to the condensation product thereof, as according to the preferred embodiment (column 2, lines 37 to 66; column 6, line 32 to column 7, line 8). The same structure

is disclosed in the application in suit (page 8, Scheme 3), wherein the reaction of (n+1) moles diepoxy compound, n moles dicarboxylic acid and 2 moles monocarboxylic acid leads to an intermediate product (a) whose main chain results from the normal condensation between the difunctional reactants and wherein only the terminal epoxy groups of the condensation product are esterified with the monocarboxylic acid. Likewise the preparation of the polyhydroxy polyester (a) described in Example 1 (page 20, lines 10 to 33) does not suggest that undesired side reactions leading to low molecular weight products may occur, since the condensation product has a structure corresponding exactly to the initial amounts of the three reactants.

- 5.4 The argument that Claims 1 should be interpreted as product-by-process claims (Statement of Grounds of Appeal, point 4) cannot lead to a different result. As mentioned above, because of the broad formulation of Claim 1 of both these requests which encompass polyhydroxy polyesters (a) with epoxy groups, the esterification of hydroxy groups does not take place necessarily; consequently, subparagraphs (a) and (b) of these claims may or may not relate to the desired reaction. In other words, the mere condition of reactivity, as it is expressed in Claims 1, represents at most a technical feature without involving a specific reaction; it cannot, therefore, be equated with an actual requirement of reaction and be by itself a substitute for the quantitative conditions regarding the initial reactants and/or the structural features of the intermediate reaction product (a). For this reason, the present Claims 1, wherein neither the products are defined structurally, nor the specific reaction conditions are mentioned, cannot be regarded as proper product-by-process claims, fixing unequivocally the reaction products.

Even if one follows the interpretation of Claims 1 suggested by the Appellant, the subject-matter of Claims 3 and 5 immediately provide evidence that this interpretation is incorrect. The definition of the radicals R<sup>4</sup> comprises hydrogen atoms, which corresponds to structures which can only be obtained by opening the oxirane rings of the reaction product (a), as actually taught in document (1).

- 5.5 In conclusion, in view of the above arguments, the subject-matter of Claim 1 of each of these requests cannot be regarded as novel over the prior art teaching.

**Second auxiliary request**

By contrast, examination of the second auxiliary request leads to a different result.

6. The presence in Claim 1 of pendant side chains which have polymerisable ethylenic unsaturation corresponds to the polyester backbone having such pendant groups as specified in the original description (page 15, lines 15 to 17). The requirement in Claims 1 and 3 that the side chains should be derived from said polymerisable ethylenically unsaturated compound is not disclosed as such in the description; however, the proposed amendment is, in the Board's judgment, allowable since it is in effect a disclaimer vis-à-vis the compounds disclosed in document (1).
7. Although document (1) specifies that the basically linear polymer disclosed therein may be further modified (column 3, lines 3 to 29), the mechanisms which are involved and the reactions which are actually described do not teach the introduction of lateral unsaturation by

means of reactions with the secondary hydroxy groups of the intermediate product (a).

Firstly, it is possible to blend the prior art polyhydroxy polyesters with various monounsaturated and diunsaturated compounds giving rise to copolymerisation and cross-linking reactions; in this respect, acrylic and methacrylic acid, which are explicitly cited as suitable for this purpose, have to be regarded as true addition monomers, not as esterification reactants. This is due to the particular reactivity of the unsaturated groups at both ends of the polymer main chain, whereby the hydroxy groups remain unaffected.

The second type of modification is mentioned in general terms only. The reactions involve the pendant hydroxy groups described as reactive in customary hydroxy-type condensations; although the formation of the polymer structure claimed by the Appellant is based on such condensation reaction, this general statement which is not even exemplified cannot be regarded as the specific modification with unsaturated groups as in the application in suit.

For these reasons, the additional presence of unsaturated side chains in the polyester has to be regarded as a structural feature which confers novelty on the claimed subject-matter.

8. Since the only ground for refusal - lack of novelty of the subject-matter of Claim 1 - is no longer valid for Claim 1 of set C, the decision under appeal must be set aside. Nevertheless, since the set of claims C constituting the second auxiliary request was not submitted before the Examining Division, the appeal is not allowable. Furthermore, the patent sought cannot be granted since the

substantive examination has not yet been completed. The Board, therefore, makes use of its power under Article 111(1) EPC to remit the case to the Examining Division for further prosecution.

9. Procedural matters

- 9.1 Since the appeal is not allowable, the appeal fee cannot be reimbursed under Rule 67 EPC as requested by the Appellant. Nevertheless, the submissions made by the Appellant concerning the alleged substantial procedural violations made by the Examining Division during the examination procedure under Article 96(2) EPC (see paragraph IV above) deserve consideration by the Board, since if such submissions were correct, it would be desirable for the Board to support the Appellant in this respect, in order that the Examining Division should consider modifying its procedure in future cases.

The procedure under Article 96(2) EPC requires that any communication from the Examining Division thereunder "shall contain a reasoned statement covering, where appropriate, all the grounds against the grant" of the patent (Rule 51(3) EPC). Furthermore, the Examining Division shall invite the applicant "as often as necessary" to file observations in reply (Article 96(2) EPC, and "where necessary, to file the description claims and drawings in amended form" (Rule 51(2) EPC). Thus the Examining Division has a discretion either to invite observations and amendments in reply, which should be done when necessary, or (after its first communication has been issued) to issue a decision rejecting the application.

The manner in which such discretion should be exercised was considered in Decision T 84/82 (OJ EPO 1983, 451). In paragraph 7 it is stated:

"7. If the Applicant fails to make any real progress towards the refutation of the presumption of invalidity properly established in the first communication by the Examining Division, or no such progress appears to be possible even with amendments on the face of information available, it is within the discretion of the Examining Division, according to Article 96(2) EPC, to interpret the submissions on behalf of the Applicant as complete and final, and to assume, in consequence, that no useful purpose would be served by the provision of further opportunities for filing observations, and to reject the application in the second communication, when this is justified by the above circumstances. It is the declared aim of the European Patent Office to carry out the substantive examination thoroughly, efficiently and expeditiously, but this requires also a proper collaboration from the Applicants, and good faith. The necessity for filing further observations prevails as long as progress towards grant can be envisaged in the light of submissions made."

While this Board generally supports what is there set out, some qualification is appropriate. As is stated in the Guidelines for Examination, C-VI, 2.5, with which the Board agrees, "The examiner should be guided at the re-examination stage by the overriding principle that a final position (grant or refusal) should be reached in as few actions as possible, and he should control the procedure with this always in mind." Thus in the Board's view, even if it is possible for the Examiner to envisage amendments which might enable progress towards grant, the burden lies upon an Applicant (if he so wishes) to propose amendments



(including by way of auxiliary requests) which overcome the objections raised by the Examining Division, in his observations in reply to the first communication in which such objections are raised.

In the present case, the objection of lack of novelty of Claim 1 was clearly raised and explained in the first communication under Article 96(2) EPC. If the Appellant wished to minimise the risk of an immediate adverse decision and consequent necessity of an appeal, it was clearly appropriate for him to have filed auxiliary requests (such as were filed in this appeal) before the Examining Division. The Examining Division would then have been obliged to consider the allowability of each auxiliary request so filed, in the same way as the Board of Appeal has in this appeal.

9.2 In relation to the suggestion that the Appellant's right to request oral proceedings had been circumvented by the course taken by the Examining Division in the present case, the Board comments as follows:

As was stated in Decision T 299/86 dated 23 September 1987 (Headnote published OJ EPO 1988, 88), "the right of a party to have oral proceedings is dependent upon such party filing a request for such proceedings: in the absence of such a request, a party has no right to such proceedings, and the EPO can issue a decision, whether adverse or not, without appointing such proceedings" (paragraph 2). Furthermore, "unless and until (the party) has actually filed such a request, he runs the risk that an adverse decision may be issued without the appointment of such proceedings, if it is otherwise appropriate to do so. A request for oral proceedings may be withdrawn at any time, so if there is a possibility that oral proceedings will be required, it is clearly safer from a party's point

of view to make such a request at an early stage. Withdrawal of a request should clearly be made as early as possible and well in advance of the appointed day." (paragraph 5).

Thus in the present case, if the Appellant had in mind to request oral proceedings before the Examining Division, he should have filed a request for such proceedings at the latest with his observations in reply to the (first) communication from the Examining Division, if he wished to avoid the risk of an adverse decision being issued without the appointment of such oral proceedings.

9.3 Finally, in relation to the Appellant's complaint as to the failure of the Examiner to telephone as requested, the practice in relation to such informal communications is clearly set out in the Guidelines, paragraphs C-VI, 4.4 and 6. Such informal communications and the practice relating to them should be clearly distinguished from the formal examination procedure governed by Article 96(2) and Rule 51 EPC. The Examiner's discretion as to whether to make such an informal communication must be exercised in accordance with the Guidelines having regard to the particular circumstances of each individual case. An exercise of such discretion adversely to an applicant, such as in the present case, cannot by its nature be a procedural violation, however, because the procedure for such conversations is informal in the sense that it is not governed by the EPC, but is additional to the procedure provided by the EPC.

In any event, in the Board's view, in the present case no criticism can properly be made of the Examiner in relation to his failing to telephone the Appellant.

- 9.4 For the above reasons, in the Board's view the procedure before the Examining Division did not violate Article 113(1) EPC, and did not involve any procedural violation which could justify refund of the appeal fee.

Order

For these reasons, it is decided that:

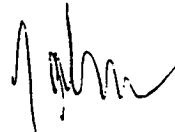
1. The decision under appeal is set aside.
2. The main request and the first auxiliary request are rejected.
3. The case is remitted to the Examining Division for further prosecution on the basis of Claim 1 of set C - the second auxiliary request - filed on 29 March 1989.
4. The request for reimbursement of the appeal fee is rejected.

The Registrar:



M. Beer

The Chairman:



K. Jahn