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D E C I S I O N
of 15 November 1996

Case Number: T 0226/93 - 3.3.3

Application Number: 86101684.8

Publication Number: 0193019

IPC: C08G 63/68

Language of the proceedings: EN

Title of invention:
Phosphoric ester compound

Patentee:
DAINICHISEIKA COLOR & CHEMICALS MFG. CO. LTD.

Opponent:
Imperial Chemical Industries PLC

Headword:
-

Relevant legal provisions:
EPC Art. 54(3), 84, 123(2), 123(3)

Keyword:
"Clarity (yes, after amendment) - removal of disjunction -
matter in brackets"
"Novelty (yes) - inevitable disclosure - standard of proof not
met"

Decisions cited:
T 0012/90, T 0760/90

Catchword:
-



Case Number: T.0226/93 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 15 November 1996

Appellant:
(Proprietor of the patent)

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Decision under appeal:

Decision of the Opposition Division of the
European Patent Office dated 29 September 1992
and issued in writing on 15 January 1993 revoking
European patent No. 0 193 019 pursuant to
Article 102(1) EPC.

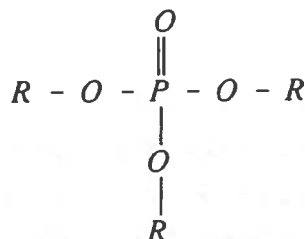
Composition of the Board:

Chairman: C. Gérardin
Members: R. Young
J. A. Stephens-Ofner

Summary of Facts and Submissions

I. The mention of the grant of European patent No. 0 193 019, in respect of European patent application No. 86 101 684.8, filed on 10 February 1986 and claiming Japanese priorities of 21 February 1985 (JP 33492/85) and 25 September 1985 (JP 210291/85) was announced on 19 April 1989 (Bulletin 89/16). The patent as granted contained two sets of claims, one set for all designated Contracting States except AT, and one set for Contracting State AT. Claim 1 of the former set read as follows:

"A phosphoric ester compound represented by the formula below.



(where one or more than one of the three R's are hydroxyl-terminated polyester residues obtained by self-polycondensation of a hydroxy-carboxylic acid; and one or two of the three R's remaining are hydrogen atoms, cations, or residues of an alcohol excluding the above-mentioned polyester.)"

Claim 2 read as follows:

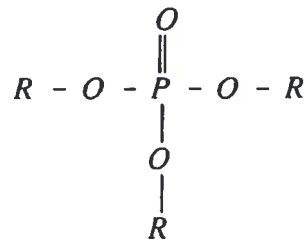
"A phosphoric ester compound as set forth in Claim 1, wherein all of the three R's are the residue of the hydroxyl-terminated polyester obtained from a hydroxy-carboxylic acid."

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The remaining Claims 3 to 5 were directed to elaborations of the phosphoric ester compound according to Claim 1.

Claim 1 of the set of claims for Contracting State AT read as follows:

"A process for producing a phosphoric ester compound represented by the formula below



(where one or more than one of the three R's are hydroxyl-terminated polyester residues obtained by self-polycondensation of a hydroxy-carboxylic acid; and one or two of the three R's remaining are hydrogen atoms, cations, or residues of an alcohol excluding the above-mentioned polyester) by reacting one mol of an ester-forming phosphorous compound with 3 mols, 2 mols or 1 mol of a hydroxyl-terminated polyester, obtained by self-polycondensation of hydroxy-carboxylic acid."

Claim 2 read, after correction of a printing error, as follows:

"A process as set forth in Claim 1, wherein all of the three R's are the residue of the hydroxyl-terminated polyester obtained from a hydroxy-carboxylic acid."

The remaining Claims 3 to 5 were directed to further elaborations of the process according to Claim 1.

II. Notice of Opposition was filed on 11 January 1990, on the grounds of lack of novelty within the terms of Article 54(3) EPC and lack of sufficiency. The opposition was supported inter alia by the documents:

D1: EP-A-0 164 817, and the later filed, but admitted

D2: G.M. Kosolapoff and L. Maier; "Organic Phosphorus Compounds", Vol. 6, Wiley-Interscience, 1967.

III. By a decision which was given at the end of oral proceedings held on 29 September 1992 and issued in writing on 15 January 1993, the Opposition Division revoked the patent.

According to the decision, the original expression in Claim 1, "hydroxyl-terminated polyester residues obtained by polycondensation of ..." had been incorrect, as the polycondensation reaction did not yield a residue of a polyester, but a polyester as such. The only correct wording was that at page 3, lines 27/28 of the description, referring to "hydroxyl-terminated polyester ... obtained by self-polycondensation of a hydroxy-carboxylic acid". Such a polyester had, however, to have a carboxy end group.

The amendment, made during the oral proceedings, by which the original expression had been replaced by the phrase "residue of a hydroxyl-terminated polyester", and which had, in the Division's view, been necessary, nevertheless gave rise to an ambiguity or inconsistency with that part of the description which referred to "a hydroxy-terminated polyester obtained by **esterifying** an alcohol with the terminal carboxyl group of a polyester

obtained from the above-mentioned hydroxy-carboxylic acid" (page 3, lines 33 to 38), and with Examples 1 to 10 and 13 to 19, which related to compounds where the carboxylic end groups were esterified.

The patent specification with the examples relating to compounds in which the end groups had been esterified remaining, there was therefore a contravention of Article 84 EPC.

Even if, however, a broader interpretation of the claims had been adopted so that they were deemed to encompass compounds based on polyesters having esterified carboxylic acid end groups, such an extensively construed claim would have lacked novelty in the light of D1, which formed state of the art by virtue of Article 54(3) EPC. In particular, the mono- and diesters formed according to Example 4 thereof would inevitably contain a certain amount of the triester. This was evidenced by the disclosure of D2, which stated at page 223 that there appear always small quantities of ... tertiary ester.

Consequently, the claims did not meet the requirements of the European Patent Convention.

- IV. On 3 March 1993, a Notice of Appeal against the above decision was filed, together with payment of the prescribed fee.

In the Statement of Grounds of Appeal filed on 25 May 1993, the Appellant (Patentee) submitted a new Claim 1, corresponding to that considered at the oral proceedings before the Opposition Division, but without the amendment considered necessary by the Division, and argued that the amendment suggested by the Division had not been "bona fide", since the impression had been given that it would increase the chances of maintaining

the patent, whereas it had in fact been used to justify an Article 84 objection, the consequence of which had not been addressed by the Opposition Division during the oral hearing.

The Appellant had thus been deprived of his "right to be heard".

Furthermore, with regard to the objection of lack of novelty, D1 disclosed only the preparation of a diester. The argument that a minor amount of triester would inevitably be formed was pure speculation, because there was no evidence for this in the examples of D1, and D2 corresponded to secondary literature and was in any case not concerned with the special compounds of D1.

Finally, in being denied the requested opportunity to study D2, the Appellant had again been denied the "right to be heard".

- V. The Respondent (Opponent) disagreed that the Appellant had been denied the right to be heard, and argued, in a submission filed on 24 November 1993 and a supplementary submission filed on 18 October 1996, that the inconsistency between the claims and description was still present in the claims to which the Appellant had returned. Furthermore, objection also arose in view of a contradiction between Claim 1 and Claim 2, and between Claim 1 and the statement of invention, as to the number of hydroxyl-terminated residues. In particular, Claim 1 did not mention that the phosphoric ester compound was a "triesters". Such further objections should be admitted because it was unfair to the reader of the patent, and a national court, for a clearly deficient claim to remain in the patent. The Proprietor should therefore be obliged to bring the claims and description into agreement with each other.

On the question of novelty, the generic disclosure of D1 extended to a phosphate ester including three polyester chains, and consequently, following the principles set out in decision T 0012/90, such overlap should be removed because the later claim in effect reclaimed the same invention.

The inevitable formation of triester was not mere speculation, but clearly based on the disclosure of D2, which was a textbook and thus a general teaching which would be expected to form part of the knowledge of the skilled person. Furthermore, there was no suggestion in D2 that its teaching was limited in its scope, and the R groups mentioned in D1 were linear, so that it was unlikely that the steric factors mentioned in D2 would have any significance.

VI. Oral proceedings were held before the Board on 15 November 1996. During these proceedings, the Appellant cited for the first time the following document:

D3: Römpp's Chemie-Lexikon/Otto-Albrecht-Neumüller, 8th Edition, Franckh'sche Verlagshandlung, Stuttgart/1987, page 3285;

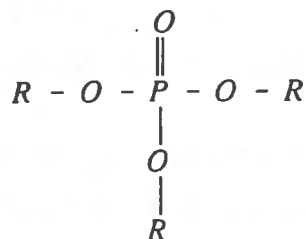
and a further document, which was not taken on to the file.

During the proceedings, the Appellant also filed two sets of claims (for all designated Contracting States except AT; and for AT) forming a main request, and two such sets of claims forming an auxiliary request.

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Claim 1 of the main request (all designated Contracting States except AT) reads as follows:

"A phosphoric ester compound represented by the formula below

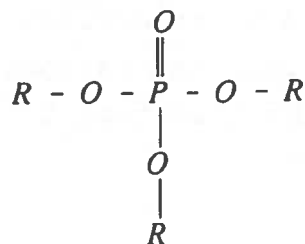


where one or more than one of the three R's are hydroxyl-terminated polyester residues obtained by self-polycondensation of a hydroxy-carboxylic acid; and any R's remaining are residues of an alcohol excluding the above-mentioned polyester."

Claims 2 to 5 are directed to elaborations of the phosphoric ester compound according to Claim 1.

Claim 1 for the Contracting State AT reads as follows:

"A process for producing a phosphoric ester compound represented by the formula below



where one or more than one of the three R's are hydroxyl-terminated polyester residues obtained by self-polycondensation of a hydroxy-carboxylic acid; and any R's remaining are residues of an alcohol excluding the above-mentioned polyester by reacting one mol of an ester-forming phosphorous compound with 3 mols, 2 mols or 1 mol of a hydroxyl-terminated polyester, obtained by self-polycondensation of hydroxy-carboxylic acid."

Claims 2 to 5 for Contracting State AT are directed to elaborations of the process according to Claim 1.

- VII. The Appellant requested that the decision under appeal be set aside and the patent be maintained on the basis of the main or auxiliary request filed during the oral proceedings held on 15 November 1996.

The Respondent requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.
2. *Late-filed documents*
 - 2.1 The reference D3 was cited in response to an objection by the Respondent that the definition of the groups R was not clear as regards Article 84 EPC, which also formed the ground of revocation of the patent by the Opposition Division, and is regarded as sufficiently relevant to be admitted into the proceedings under Article 114(1) EPC.

2.2 The relevance of the further document referred to by the Appellant was not, however, apparent to the Board, and this was excluded from the proceedings, under Article 114(2) EPC.

3. *Amendments; main request*

A. Claims 1 to 5 for all designated Contracting States except AT.

3.1 The version of Claim 1 underlying the present decision differs in three respects from that as granted, and in one additional respect from that underlying the decision under appeal.

3.1.1 Compared with the version as granted, the three differences are as follows:

- i) The expression "one or two of the three R's remaining" has been replaced by the phrase "any R's remaining";
- ii) The references to "hydrogen atoms" and "cations" have been deleted;
- iii) The full stop after the word "below" in the first line of the claim has been deleted and the brackets enclosing the entire definition of the "R's" have been removed.

3.1.2 Compared with the version underlying the decision under appeal, Claim 1 differs in that the phrase "residues of hydroxyl-terminated polyester" has been amended to read "hydroxyl-terminated polyester residues". The latter amendment corresponds, however,

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to a restoration of the wording appearing in Claim 1 as originally filed and also in Claim 1 as granted, and hence no question of allowability within the terms of Article 123 EPC arises.

3.1.3 Consequently, it is only necessary to consider the allowability of amendments i), ii) and iii) above in the sense of Article 123(2) and 123(3) EPC.

3.2 Amendment i), above finds a basis, as far as the phrase "R's remaining" is concerned, in the original wording of Claim 1 of the application as filed, where the phrase "one or two of the three R's, in the case of being remained" appears. Whilst the use of the passive "being remained" is unconventional in English, it is clear that the amended phrase "R's remaining" corresponds to what the original evidently meant. This is corroborated by the description as originally filed, in which it is stated that "one or two R's other than polyester residues in the above-mentioned formula may be groups other than the above-mentioned polyester, such as residue of alcohol compounds, ..." (page 6, first complete paragraph). The specific restriction to "any" R's remaining is supported by Examples 16 to 19 as filed, which illustrate such mixed ester species where no third type of residue is present.

Consequently, there is no objection to the amendment under Article 123(2) EPC.

3.3 One effect of amendment i), above is clearly to narrow the scope of the claim, compared with that as granted, since it excludes the possibility, previously covered, that one of the "R" groups could be a hydroxy-terminated polyester residue as defined, one "R" group could be a residue of an alcohol as defined, and the third "R" group could be something quite different.

The question arises, however, as to whether its other effect, which is to make it explicitly clear that Claim 1 covers the possibility that all three "R" groups can be hydroxy-terminated polyester residues, involves a broadening compared with the granted version.

3.3.1 The fact that the Respondent has consistently adopted the position that Claim 1 as granted only covered a phosphoric ester containing one or two hydroxyl-terminated polyester groups and therefore excluded the subject-matter of dependent Claim 2 (Notice of Opposition, paragraph 6; submission in appeal dated 24 November 1993, paragraph 4.2) means that this question must be addressed by the Board.

3.3.2 In order to assess this, it is necessary to consider the syntactical structure of the definition of the "R" groups in Claim 1 as granted. It falls into two parts. The first part establishes a primary requirement, namely that "one or more than one of the three R's are hydroxyl-terminated polyester residues....". The second part states "and one or two of the three R's remaining are residues of an alcohol excluding the above-mentioned polyester." The key to the relationship between the first and second parts of the definition resides, in the Board's view, in the repetition, in the second part, of the word "three".

3.3.3 Thus both parts define a selection from an original assembly of three groups "R". Whilst this assembly is, according to the first part of the definition, not subject to any further restriction, i.e. the choice is made from three completely uncommitted "R" groups, the assembly according to the second part is defined by the phrase "the **three R's remaining**" (emphasis by the Board). This means that the second selection is

subordinate to the first, being subject to the further requirement that such "R" groups are still "remaining", i.e. uncommitted, following the initial selection specified in the first part of the definition.

- 3.3.4 The argument of the Respondent, that the definition must be read as meaning that there are always one or two "R" groups remaining interprets the definition back to front, implying that the second part of the definition governs the first.

Whilst the use of the definite article in relation the "R" groups in the second part of the definition might lead to the assumption that such groups must always be present ("the... groups remaining"), there is nothing in the grammatical form which would explicitly require this. On the contrary, such a requirement would be inconsistent with the fully uncommitted nature of the "R" groups established in the first part of the definition (section 3.3.3, above). Furthermore, it is contradicted by the repetition of the word "three" already referred to (section 3.3.2, above), since there could never be "three" R's from which to make the second selection, as would be predicated by this interpretation. To ignore this part of the definition as meaningless would be contrary to the general rule of construing documents, namely, that each word expressly used must be deemed to have a meaning, and that which is expressed supersedes that which is implied (*"Expressum facit cessare tacitum"*).

Consequently, the interpretation canvassed by the Respondent is not in accordance with the wording of the claim. On the contrary, it is clear that the phrase "one or two of the three R's remaining" refers to such of the three original R groups as remain after the first selection has been made. This does not

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exclude the possibility that none remains. Thus, the wording of Claim 1 as granted already encompassed the subject-matter of Claim 2 and the amendment therefore does not imply that the scope of Claim 1 has been broadened. In other words, there has been no contravention of Article 123(3) EPC.

- 3.4 Amendment ii) consists of the simple deletion of two alternative meanings for the second selection of the "R" groups, leaving, as remaining alternatives, embodiments of the type exemplified in Examples 14 to 19.

No objection to the allowability of this amendment was raised by the Respondent, and the Board sees no reason to raise an objection of its own. Thus, amendment ii) is allowable.

- 3.5 Amendment iii) was required by the Board, primarily to remove the disjunction caused in the claim by the presence of a full stop part way through the text and by the fact that the entire definition of the "R" groups was enclosed in brackets. According to decision T 0760/90 of 24 November 1994, not published in OJ EPO, an expression put between parentheses cannot be construed as limiting or defining the subject-matter of the claim (Reasons for the decision, point 2.1). This means that matter placed between brackets cannot be regarded as a limiting feature.

Removal of the redundant full stop and the brackets, however, removes the disjunction and renders the features previously within brackets clearly limiting on the claim. It thus corresponds to a restriction of the scope of the claim. No objection was raised against it. It is, therefore, an allowable amendment.

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3.6 It is furthermore a consequence of the above finding, that even if the other amendments had been found to render the text broader in scope than the granted version, this would not in itself have led to a sustainable objection under Article 123(3) EPC, because the claim in its scope as granted - with the definition of the "R" groups in brackets" - could not have been regarded as limited by the features within those brackets.

3.7 The amendments effected to the claims of the main request (all designated Contracting States except AT) are therefore allowable.

B. Claims 1 to 5 for Contracting State AT.

3.8 No objections were raised by the Respondent to the amended version of Claims 1 to 5. The amendments to Claim 1 correspond, *mutatis mutandis*, to the amendments effected in Claim 1 of the version for all designated Contracting States except AT, and are considered by the Board to be allowable for reasons analogous to those set out in sections 3.1 to 3.7 above. No objection was raised under Article 123(2) EPC against Claims 2 to 5, which in any case remain unamended compared with the version as granted. Neither does the Board see any objection under Article 123 EPC to these claims.

3.9 The amendments are, in the light of the above considerations, held to be allowable under Article 123(2) and 123(3) EPC.

4. *Clarity (Article 84 EPC)*

A. Claims 1 to 5 for all designated Contracting States except AT.

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4.1 Two objections were raised to the clarity of Claim 1. The first objection, that Claim 1 was inconsistent with the summary of the invention on page 2 and also excluded the subject-matter of Claim 2, is not justified, for the reasons given in sections 3.3.1 to 3.3.4, above. Furthermore, the basis for it has been removed by the amendment referred to under 3.1.1.i), above.

4.2 The second objection was that Claim 1 did not encompass esters in which R represented the residue of a hydroxyl-terminated polyester derived from self-polycondensation of a hydroxy-carboxylic acid followed by esterification of the terminal carboxyl group by reaction with an alcohol, as envisaged in the description at page 3, lines 33 to 38 of the patent specification and resulting in the compounds exemplified in Examples 1 to 10 and 13 to 19, since such a polyester clearly had to have a carboxy end group (decision under appeal, Reasons for the decision, paragraph 6.2, and Respondent's submission of 24 November 1993, page 2, paragraph 3).

The Board finds this interpretation unjustifiably narrow for the following reasons:

4.2.1 There is no reference in Claim 1 to a carboxylic acid terminated residue.

4.2.2 This is fully consistent with the description, where there is equally no statement that such a termination must be present.

On the contrary, the description states that "The phosphoric ester of this invention can be obtained by various methods" (page 2, line 51). In particular, an ester-forming phosphorus compound can be reacted with 3 to 1 mole of:

- i) a hydroxyl-terminated polyester obtained by self-polycondensation of hydroxy-carboxylic acid; or
- ii) a hydroxy-carboxylic acid or lower alcohol ester thereof as a monomer and the resulting ester undergoes chain growth with the same or different hydroxy-carboxylic acid monomer and/or hydroxy-terminated polyester (page 2, lines 51 to 59).

Thus, it is clear that the polyester chains are in any case not necessarily pre-formed prior to reaction with the ester-forming phosphorus compound, but rather that they may be formed by chain growth after attachment to the central P atom of a monomer. Furthermore, this monomer can, in one alternative, be a low alcohol ester of a hydroxy-carboxylic acid. Hence, ester-terminated polyesters are clearly envisaged in the "R's" of the compounds according to Claim 1.

4.2.3 The argument relied upon in the decision under appeal, that the statement concerning "hydroxyl-terminated polyesters obtained by esterifying..." (page 3, lines 33 to 35) clearly differentiated from the previous passage referring to "The hydroxyl polyester...obtained by self-polycondensation of a hydroxy-carboxylic acid which has both a hydroxyl group and a carboxyl group on the molecule." (page 3, lines 27 to 28) is irrelevant, because neither statement relates to the generality of the phosphoric ester molecules as defined in Claim 1. On the contrary, both passages relate only to specific ways

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of preparing a preferred polyester reactant, which is not itself an essential requirement in the preparation of the claimed compounds (section 4.2.2, above).

Consequently, such passages do not restrict the definition of the compound defined in Claim 1.

- 4.2.4 In this connection, the amendment considered necessary in the decision under appeal (Section III., above), to align the wording of Claim 1 with the passage referred to on page 3 at lines 27 to 28 (section 4.2.3, above), and which, in the event, formed the basis of the objection under Article 84 EPC which led to the revocation of the patent by the Opposition Division, is also irrelevant to the issue of clarity for the same reasons.

Since, however, the Appellant has understandably resiled from the amendment in the present version of Claim 1 (section 3.1.2, above), there is no need for the Board to discuss its substance further.

- 4.2.5 The finding in the decision under appeal that such an amendment was necessary, however, (Reasons for the decision, paragraph 6.1), is indicative, in the Board's view, of a misconception concerning the essential nature of the limitation incorporated by the polyester residues "R" defined in Claim 1. This concerns the repeating unit of a polyester chain attached to the central P atom, rather than an unspecified detail of its terminating group. This is corroborated by the definition of the term "polyester" in D3, which presents the formula for a species derived from a hydroxy-carboxylic acid solely in terms of a repeating unit (page 3285).

Hence, it is of no consequence for the clarity of Claim 1 whether the terminal group of the polyester chain attached to the central P atom is esterified or not. In particular, the definition of the "R's" in Claim 1 encompasses, without any element of inconsistency, all the variants referred to above, and in particular the subject-matter of Examples 1 to 10 and 13 to 19 (submission of the Respondent dated 24 November 1993, page 2, paragraph 3).

4.2.6 The objection put forward by the Respondent at the oral proceedings before the Board, that Claim 1 was unclear because the definition of the "R's" could be read as meaning that the polyester chains attached to the central P atom were terminated with hydroxyl groups, whilst possibly corresponding to a particular narrow grammatical sense of the words of the claim when read in isolation, is inconsistent with the totality of the disclosure of the patent in suit, in the light of which the claim has to be read (Article 69(1) EPC). The latter makes it clear that the significance of the reference to hydroxy termination is that it forms the means of reaction to establish the linkage of the polyester residue to the central P atom of the phosphoric ester.

4.2.6.1 In particular, this is evident from the opening description of the patent in suit, which contains the general statement that "a phosphoric ester obtained by reacting a polyester having a hydroxyl group with phosphoric acid exhibits outstanding properties.... The present invention was completed based on this finding." (page 1, lines 19 to 22).

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4.2.6.2 Furthermore, all the described methods of preparation of the relevant phosphoric esters have in common that they depend on the reaction of the central P atom with a hydroxyl group (page 2, lines 51 to 54), as does the general method of preparation claimed (Claim 1 for Contracting State AT).

4.2.6.3 Consequently, the interpretation canvassed by the Respondent does not correspond to what would be understood by reading the claim in its proper context.

4.2.7 Nor does it correspond to the Respondent's own evident understanding of the claim, as expressed in a previous written submission, according to which "it is the terminal hydroxyl groups which react with a phosphating agent to form a phosphoric ester....." (Respondent's submission dated 24 November 1993, page 1, paragraph 2.).

4.2.8 On the contrary, it would be evident to a person skilled in the art that the reference to a "hydroxyl-terminated polyester residue" fixes the nature of the linkage of the residue to the central P atom and thus removes any ambiguity as to the orientation of the polyester chain in the phosphoric ester molecule.

4.2.9 To impose the contrary construction canvassed by the Respondent would thus lead to inconsistency with the description and ambiguity in the claim itself. It is, however, a generally accepted rule of construction of documents that if there are two possible ways of reading a document, one which makes sense and one which does not, the former is the correct interpretation.

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4.2.10 Consequently, Claim 1 on its correct interpretation (section 4.2.8, above) is clear as required by Article 84 EPC.

4.2.11 No separate objection was raised in this connection in respect of dependent Claims 2 to 5, which are also held to be clear.

B. Claims 1 to 5 for Contracting State AT.

4.3 Claims 1 to 5 are considered to be clear, in the sense of Article 84 EPC, for the same reasons, *mutatis mutandis*, as given under section 4.A, above.

5. *Sufficiency*

5.1 The case raised by the Respondent in the appeal in this connection is based solely on the assumption that Examples 1 to 9 and 13 to 19 should be deleted because of inconsistency with Claim 1 (submission of 24 November 1993, page 5, paragraph 6).

5.2 One consequence of the finding above that Claim 1 (all designated Contracting States except AT) is clear, is, however, that there is no such inconsistency and hence no need for deletion of the examples referred to by the Respondent.

5.3 There is thus no basis for doubting that the subject-matter claimed is sufficiently disclosed. This being the case, the requirements of Article 100(b) EPC are held to be met.

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6. Novelty

6.1 The only remaining issue in the appeal is the question of whether the subject-matter of Claim 1 (all designated Contracting States except AT) lacks novelty in view of the disclosure of D1. It was not disputed, in this connection, that D1 formed state of the art by virtue of Article 54(3) EPC, regardless of whether the claims of the patent in suit were entitled to their earliest priority date or not (decision under appeal, Reasons for the decision, paragraph 7.1). The Board sees no reason to diverge from this view.

6.2 The patent in suit is concerned, in its product aspect, with the provision of a phosphoric ester compound containing a polyester chain useful as a pigment dispersant or flushing agent in the production of a pigment composition (page 2, lines 5 to 9). Such a compound is, however, known from the relevant state of the art, consisting of D1.

6.3 According to D1, there is disclosed a surfactant particularly suitable *inter alia* for enhancing the dispersibility of solids, such as pigments, in organic media (page 7, lines 2 to 5 and 21 to 31). The compound comprises a carboxylic acid ester or amide carrying a terminal acid group selected from carboxymethyl, sulphate, sulphonate, phosphate and phosphonate (Claim 1). Preferably, the compound has the formula:



wherein A and D are groups one of which is or carries the acid group and the other is a terminal group which does not render the compound hydrophilic, B is a hydrocarbon group and m is from 1 to 100 (page 1, lines 20 to 28). In the case where A carries the acid

group, D is preferably the residue of an alcohol, a thiol or a primary or secondary amine. In this case A is preferably the acid group itself, and, where this has more than one valency, it may be linked to two or more polyester chains (page 2, lines 9 to 19).

The surfactant may be prepared by polymerising a hydroxy-carboxylic acid or lactone in the presence of a monohydric alcohol, or a primary or secondary monoamine, to form a polyester having a terminal hydroxy group and reacting the hydroxy-terminated polyester with a phosphating agent, such as phosphorus pentoxide (page 16, lines 25 to 30).

In a preferred embodiment, a mixture of 500 g of E-caprolactone, 67 g of dodecanol and 0.1 g of tetrabutyl titanate was reacted and allowed to solidify as a waxy solid, termed "Intermediate 3" (page 17, lines 28 to 32), 317 g of which were then reacted with 10 g of phosphorus pentoxide to give a waxy solid (page 20, Example 4).

6.4 Whilst the structure of the product obtained according to the relevant Example 4 is not explicitly stated in D1, molecular weight calculations appearing in the decision under appeal, which were not challenged by the parties in the appeal, indicate a mole ratio of Intermediate : phosphoric acid of about 1 : 1.5, leading to the conclusion that the composition predominantly consists of mono and diester (Reasons for the decision, paragraph 7.2).

6.5 Consequently, there is no explicit disclosure in Example 4, or anywhere else in D1, of a fully esterified phosphoric ester species as required by Claim 1 of the patent in suit, or even of a molar

ratio of reactants which would be expected to lead to such a triester. On the contrary, it is a general requirement of D1, that a terminal acid group be present, thus excluding the possibility of a fully esterified central P atom.

- 6.6 The argument of the Respondent (then Opponent), that the reference to an acid group should not be understood as meaning an acid function in the sense of a hydrogen atom or a cation (submission filed on 25 May 1991, page 5, paragraph 3.1) is not convincing to the Board, since, in the absence of an explicit disclosure of neutral esters in D1, and indeed of any other reason to doubt that the reference in D1 to an essential "acid group" (page 1, lines 9 to 13) means an acid functional group, this is precisely what the skilled person would understand from such a disclosure.

Consequently, the Respondent has failed to show a generic overlap of disclosure between D1 and the subject-matter claimed in Claim 1 of the patent in suit. Hence, there is no justification for entering into a discussion about decision T 0012/90 of 23 August 1990 (not published in OJ EPO) referred to by the Respondent.

- 6.7 The only remaining question is that of whether, in the reaction concretely described in Example 4, there is nevertheless, in practice, some incidental formation of triester which could be held to fall within the scope of the claims of the patent in suit.

- 6.7.1 First of all, it must be said that the onus is on the Respondent, in such a case, as the party endeavouring to establish lack of novelty, to show that the relevant technical feature (in this case, the formation of triester) is derivable in a clear and

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unambiguous or unequivocal manner from the prior art cited. In this connection, the standard of proof needed to establish the necessary degree of derivability from a prior art document is not the normal one of the preponderance of the evidence (or balance of probability), but, in practice, the much stricter one of "beyond reasonable doubt", so that the slightest degree of credibility of a construction of such a prior document other than an anticipatory one will ensure the novelty of an attacked claim over that document.

6.7.2 Against this background, there is nothing in the disclosure of D1 which would indicate the inevitability of a triester being formed. On the contrary, the requirement, referred to above, for the presence of an "acid group" contradicts this. Even if this had not been the case, however, the molar ratios used in the most relevant Example 4 relied upon indicate a level of esterification of one or two, and not three.

6.7.3 The argument of the Respondent, that some triester would always be formed, was based on the evidence of a further document D2. This document is a general text relating to organic phosphorus compounds, was published in 1967, and concerns reactions of phosphorus pentoxide with hydroxy compounds. It contains the statement, that:

"...the old formulation of this reaction as



is quite insufficient and does not explain the fact that there appear always small quantities of free phosphoric acid and of tertiary ester" (D2, passage bridging pages 222, 223). An alternative mechanism is

then proposed, about which it is stated "...the formation of primary and secondary esters is the predominant process. However, there is a minor probability that tertiary esters and phosphoric acid will be formed; this possibility can be affected by factors inherent to the nature of the radical R (steric factors for instance)." (page 223, first complete paragraph).

6.7.4 The evidence of this document is unconvincing to the Board for the following reasons:

- i) The text is dated over fifteen years before the priority date of D1 and only concerns findings related to experience previous to the date of D2 itself. It cannot, therefore, have been written in the knowledge of the disclosure of D1. Consequently, it cannot form part of the disclosure of D1.
- ii) Furthermore, the generality of its statement "there always appear small quantities of free phosphoric acid and of tertiary ester" only applies to unspecified groups R. It cannot, by its nature, make available to the skilled person concrete information about a specific residue R, let alone the particular polyester residues with which D1 is concerned.
- iii) Even if this had not been the case, the generality of the statement in D2 is itself qualified by the suggestion that the probability of a tertiary ester being formed depends on factors inherent to the nature of the radical R, for instance steric factors. The argument of the

Respondent, that the steric nature of the polyester R residues in D1 was such as to favour the formation of triester was not supported by so much as a shred of evidence, and is therefore to be regarded as speculative.

Thus, the disclosure of D2, even if taken at face value, is not sufficiently unequivocal to meet the necessary standard of proof.

6.7.5 In the light of the above, the Respondent has failed to discharge the onus of proving that the subject-matter of Claim 1 of the patent in suit (all designated Contracting States except AT) lacks novelty over the disclosure of D1. Hence, the subject-matter of this claim is novel. This is also true, by the same token, of the subject-matter of the remaining claims dependent thereon, as well as of Claims 1 to 5 (Contracting State AT) of the patent in suit, which are narrower in scope.

7. In view of the above finding, there is no necessity for the Board to consider the auxiliary request of the Appellant. Nor is it necessary for the Board finally to decide whether the Appellant was deprived of the right to be heard in the proceedings before the Opposition Division (section IV., above).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the Opposition Division with the order to maintain the patent on the basis of the claims submitted during oral proceedings as the main request and after corresponding amendments to the description.

The Registrar:


E. Gorgmaier

The Chairman:


C. Gérardin



