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Aktenzeichen / Case Number / N° du recours : T 67/88 - 3.3.1

Anmeldenummer / Filing No / N° de la demande : 80 105 650.8

Veröffentlichungs-Nr. / Publication No / N° de la publication : 0 029 100

Bezeichnung der Erfindung: Coating composition comprising compounds that
Title of invention: contain silyl groups and a hydrolysable ester
Titre de l'invention :

Klassifikation / Classification / Classement : C09D 3/82

ENTSCHEIDUNG / DECISION

vom / of / du 8 October 1990

Anmelder / Applicant / Demandeur : Kanegafuchi Kagaku Kogyo Kabushiki
Kaisha

Patentinhaber / Proprietor of the patent /
Titulaire du brevet : idem

Einsprechender / Opponent / Opposant : I. Hüls Troisdorf AG
II. Akzo NV

Stichwort / Headword / Référence : Coating compositions/Kanegafuchi

EPÜ / EPC / CBE Articles 54, 56

Schlagwort / Keyword / Mot clé : "Novelty (confirmed)"
"Second document not incorporated by reference
into primary document, whose disclosure
therefore considered in isolation"
"Inventive step (yes)"
"Onus of proof in opposition proceedings"

Leitsatz / Headnote / Sommaire

Europäisches
Patentamt

Beschwerdekammern

European Patent
Office

Boards of Appeal

Office européen
des brevets

Chambres de recours



Case Number : T 67/88 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 8 October 1990

Appellant :
(Opponent 01)

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Decision under appeal :

Interlocutory decision of the Opposition Division of
the European Patent Office dated 1 December 1987
concerning maintenance of European Patent
No. 0 029 100 in amended form.

Composition of the Board :

Chairman : K.J.A. Jahn

Members : J. Jonk

G.D. Paterson

Summary of Facts and Submissions

I. The grant of European patent 29100 in respect of European patent application 80 105 650.8, filed on 19 September 1980 and claiming priority of 19 September 1979 from a prior application filed in Japan, was announced on 16 May 1984 (cf. Bulletin 84/20).

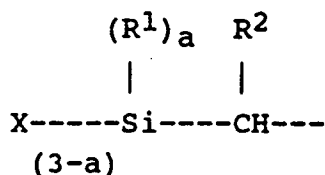
II. Notices of opposition were duly filed requesting revocation of the patent on the grounds that its subject-matter is not novel and does not involve an inventive step. The oppositions were supported by several documents including

- (2) US-A-4 157 321
- (3) GB-A-1 054 140
- (5) US-A-3 306 800

which are relevant to the present decision.

III. In order to overcome the objections raised by the Opponents and by the Opposition Division a new set of claims was presented on 18 November 1986, the only independent claim reading as follows:

"A coating composition comprising an ester which hydrolyses in the presence of traces of moisture, and at least one compound which contains in its molecule at least one silyl group having the following general formula



wherein R¹ and R² each represent a hydrogen atom or a monovalent alkyl, aryl and aralkyl group with 1 to 10 carbon atoms, X represents an alkoxy, hydroxy, acyloxy, aminoxy, phenoxy, thioalkoxy or amino group and a is 0, 1 or 2, characterized in that the silyl groups-containing compound is a polyester having a molecular weight of from 300 to 8,000, a vinyl polymer having a molecular weight of from 300 to 9,000, a diallyl phthalate prepolymer with a molecular weight of not more than 20,000 or a diallyl phthalate copolymer."

- IV. In the decision of 1 December 1987 the Opposition Division acknowledged that the claimed subject-matter is new and involves an inventive step and maintained the patent in amended form on the basis of the aforementioned set of claims.

The Opposition Division held that none of the cited documents discloses stabilised coating compositions based on the silyl groups containing polymer compounds as defined in the characterising part of the main claim and that the cited documents do not give any hint that coating compositions based on these silyl group containing polymer compounds show an improved stability in comparison with the compositions disclosed in document (2), which was regarded as the closest prior art.

- V. Notices of appeal were filed against this decision on 25 and 29 January 1988 and the appeal fees were paid on the same dates. Statements of Grounds of Appeal were submitted on 29 January and 8 April 1988.

VI. In their submissions, the Appellants argued essentially as follows:

The subject-matter of Claim 1 lacks novelty because document (2) discloses stabilised compositions comprising a silyl groups containing vinyl polymer and an ester which hydrolyses in the presence of moisture and because document (5), which is mentioned in document (2) as prior art, teaches that such polymers have a molecular weight of at least 2000.

The inhibition of the negative influence of water on compositions containing silyl groups by the addition of esters acting as water scavengers is disclosed in document (2). It is obvious that the prevention of cross-linking of the silyl groups by the water scavengers also will occur in compositions containing polymers having lower molecular weights. In view of this prior art, the compositions according to Claim 1 also lack the required inventive step.

Moreover, it was argued that the Opposition Division is not correct in saying that the Patentee has compared compositions as claimed with compositions of document (2), because what has been done is comparing a molecular weight of 6000 (and not 9000) with a molecular weight of 15 000 (and not 10 000). Furthermore, the comparison between the comparative examples 7 and 8 and example 6 (see the submission of 24 September 1982) is meaningless, because the composition of example 6 also differs by the presence of n-dodecyl mercaptan.

Apart from that, the polymers containing at least one silyl group as defined in Claim 1 cannot be prepared by using monomers such as vinyl trimethoxy silane (cf. column 3, line 45 of the patent).

VII. In his counter-statement, the Respondent followed essentially the reasoning of the Opposition Division.

In order to support the unexpected effects of the selection of the silyl groups containing polymers, additional tests were submitted.

Furthermore, the objection about the discrepancy between the description and the main claim regarding the use of a monomer such as vinyl trimethoxy silane for the preparation of the silyl groups containing polymer component was removed by deleting this monomer as an example. .

VIII. Both Appellants requested that the decision under appeal be set aside and the patent revoked.

The Respondent requested that the appeals be dismissed and that the patent be maintained in the version forming the basis of the Communication pursuant to Rule 58(4) EPC of 22 January 1987 with the modification that "vinyl trimethoxy silane" is deleted in column 3, line 45 of the patent specification.

Reasons for the Decision

1. The appeals comply with Articles 106 to 108 and Rule 64 EPC and are, therefore, admissible.
2. There is no formal objection to the present claims and the requested amendment under Article 123(2) and (3) EPC.

3. The subject-matter of Claim 1 is novel because none of the cited prior art documents discloses a coating composition comprising silyl groups containing polymer as defined in the characterising part of the claim and an ester which hydrolyses in the presence of moisture as a stabiliser.

In this connection, it is observed that stabilised coating compositions based on silyl groups containing polyesters and diallyl phthalate polymers are not described in the citations at all and that compositions based on silyl groups containing vinyl polymers differ from the disclosure in document (2) by the selection of vinyl polymers having a low molecular weight of 300 to 9000.

- 3.1 It has been argued that Claim 1 lacks novelty because document (2) incorporates by reference the teaching of document (5), that the silyl groups containing vinyl polymers must have a molecular weight of at least 2000 (cf. document (2), column 1, line 20 and document (5), column 1, line 67).

However, in document (2) there is no indication that the disclosure in document (5) and, in particular, the specific disclosure about the molecular weights of the silylated polymers (see column 2, lines 36-45) is incorporated by reference into document (2) so as to form part of its teaching in this respect. The only reference to document (5) in document (2) is the statement in context with the background art at column 1, lines 18-20 that "Examples of such interpolymerised organosilanes are found in document (5) (and five other patents)."

This situation is quite different from that in Decision T 153/85 (OJ EPO 1988, 1) for example, where the primary document contained a specific reference to a method of preparation set out in a second document as being the

method to be used when following the teaching of the primary documents; thus incorporating by reference the method of preparation in the second document into the teaching of the primary document.

In the present case, document (5) is not incorporated by reference into document (2), which must, therefore, be considered in isolation.

Consequently, in the Board's view, this novelty objection cannot be accepted.

4. The remaining issue to be dealt with is whether the subject-matter of Claim 1 involves an inventive step as required by Article 56 EPC.

4.1 After consideration of the prior art documents cited during the proceedings, it is the Board's opinion that document (2) represents the closest state of the art.

This document discloses the improvement of the stability of a silylated vinyl polymer (A) by a mixture of a hydrolysable ester (B) and an alcohol (C) (see column 3, lines 14-37).

However, it was considered that these known compositions still have an insufficient shelf stability.

4.2 Therefore, in the light of this closest prior art, the technical problem underlying the subject patent may be seen in providing a coating composition on the basis of a silyl groups containing polymer and a hydrolysable ester as a stabiliser having an improved shelf stability.

4.3 According to present Claim 1 of the subject patent, this technical problem is solved by a specific selection of

silyl groups containing polymers as defined in the characterising part of Claim 1.

In view of the examples and the uncontested comparative examples (see in particular Comparative Test B filed on 28 December 1988), the Board is satisfied that the above defined technical problem is credibly solved.

4.4 In the Board's view, this solution of the technical problem is not obvious for the following reasons:

The cited prior art does not provide any indication that would lead the skilled person to the finding that stabilised coating compositions comprising silyl groups containing polymers might be further improved in their stability by selecting the silyl groups containing polymers as defined in present Claim 1.

In particular in relation to the closest prior art, i.e. the disclosure in document (2), wherein the stabilisation of silyl groups containing vinyl polymers having a molecular weight of e.g. 10 000 is described, there is no indication that the stability might be further improved by keeping the molecular weight of the silyl groups containing vinyl polymers low, i.e. in the ranges of 300 to 9000.

Moreover, the comparative tests (filed on 24 September 1982 and 28 December 1988) clearly show an unexpected improvement of the stability of the subject compositions in comparison with the closest state of the art (see in particular the Figure of Test B filed on 28 December 1988, which also comprises the earlier filed test results).

In the Board's view, the nature of the comparative tests is acceptable, because the comparison is such that the effect is shown to have its origin in the distinguishing feature, i.e. a low molecular weight within the range of 300 to 9000, and because the comparability of the tests will not be restricted by the use of a small amount of n-dodecyl mercaptan to control the molecular weight of the polymers, since the instability of the compositions is based on the hydrolysis of the silyl groups.

- 4.5 The Appellants' argumentation that the subject compositions lack the required inventive step, because it is obvious that the known prevention of crosslinking of the silyl groups by a hydrolysable ester as a water scavenger will also occur in compositions comprising a silyl group containing polymer having a low molecular weight (see under VI above) cannot be followed, since the expectation that the known prevention of crosslinking would also be suitable for stabilising a silyl groups containing polymer falling under the scope of present Claim 1 does not lead a skilled person to the specific selection of the silyl groups containing polymers as defined in Claim 1, which selection is essential for the solution of the technical problem underlying the subject patent.
- 4.6 The objection of the Appellants that an advantage has not been shown for a molecular weight of 9000 and, moreover, is unlikely to occur cannot be accepted for the following reasons. Considering the Figure of Test B, it appears likely that a molecular weight of 9000, which is the upper limit of the claimed range, will provide an improvement in comparison with a molecular weight of 10 000. In such a situation, whereby the Board is unable to establish

disputed effects of its own motion, the onus of proof rests with the Appellants who rely upon the alleged fact (cf. T 219/83, OJ EPO 1986, 211, under point 12, the last two paragraphs).

4.7 The teachings in the documents (3) and (5), either alone or in combination with other cited documents, would not provide the skilled person with any incentive to arrive at the claimed composition, because document (3) does not relate to silyl groups containing polymers at all and document (5) only discloses that a broad group of silylated polymers is suitable as a bonding agent, whereas nothing is said in relation to the stability of such agents.

4.8 In conclusion, in the Board's judgement, the composition according to Claim 1 involves an inventive step because the solution of the problem to be solved was not obvious to a skilled person.

These arguments apply equally to the dependent Claims 2 to 9 whose patentability is supported by that of the main claim.

Order

For these reasons, it is decided that:

1. The appeal is dismissed.
2. The Decision of the Opposition Division dated 1 December 1987 is set aside.

3. The case is remitted to the Opposition Division with the order to maintain the patent in amended form based on Respondent's request as indicated under point VIII above.

The Registrar:



M. Beer

The Chairman:



K. Jahn

