

Internal distribution code:

- (A) [] Publication in OJ
(B) [] To Chairmen and Members
(C) [X] To Chairmen
(D) [] No distribution

**Datasheet for the decision
of 15 September 2009**

Case Number: T 0864/06 - 3.3.01

Application Number: 98934427.0

Publication Number: 0994930

IPC: C09D 133/06

Language of the proceedings: EN

Title of invention:
Film-forming compositions

Patentee:
PPG Industries Ohio, Inc.

Opponents:
Resolution Research Nederland B.V.
Akzo Nobel N.V.
BASF Coatings AG

Headword:
Coating compositions/PPG

Relevant legal provisions:
EPC Art. 114(2)
EPC R. 42(1)(c)
RPBA Art. 13(2)

Relevant legal provisions (EPC 1973):

-

Keyword:
"Late filed evidence - not admitted"
"Inventive step (yes) - non-obvious alternative"

Decisions cited:

-

Catchword:

-



Case Number: T 0864/06 - 3.3.01

D E C I S I O N
of the Technical Board of Appeal 3.3.01
of 15 September 2009

Appellant: BASF Coatings AG
(Opponent III) CT/R-B311
Glasuritstrasse 1
D-48165 Münster (DE)

Representative: Steffan, Gerhard
Leifert & Steffan
Patentanwälte
Postfach 10 40 09
D-40031 Düsseldorf (DE)

Respondent: PPG Industries Ohio, Inc.
(Patent Proprietor) 3800 West 143rd Street
Cleveland, OH 44111 (US)

Representative: Fleischer, Holm
Polypatent
Postfach 40 02 43
D-51410 Bergisch Gladbach (DE)

Respondent: Resolution Research Nederland B.V.
(Opponent I) Intellectual Property Section
p/a Hexion Specialty Chemicals
Res. Belgium S.A.
Avenue Jean Monnet 1
B-1348 Ottignie-Louvain-la-Neuve (BE)

Respondent: Akzo Novel N.V.
(Opponent II) Velperweg 76
NL-6824 BM Arnhem (NL)

Representative: Derks, Wilbert
Howrey LLP
Rembrandt Tower
Amstelplein 1, 31st Floor
NL-1096 HA Amsterdam (NL)

Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
31 March 2006 concerning maintenance of
European patent No. 0994930 in amended form.

Composition of the Board:

Chairman: P. Ranguis
Members: C. M. Radke
D. S. Rogers

Summary of Facts and Submissions

I. Opponent III appealed against the interlocutory decision of the opposition division that the European patent no. 0 994 930 as amended met the requirements of the EPC.

II. The oppositions were directed against the patent in its entirety and were based on grounds under Article 100(a) EPC (alleged lack of novelty and of inventive step).

III. The following documents were *inter alia* cited during the opposition proceedings:

(D3) Brochure "Manufacture of acrylic resins based on Cardura E10 - general aspects", "issued September 1996", Shell Chemicals, twelve pages

(D4) EP-A-0 635 523

(D12) EP-A-0 638 591

(D17) US-A-5 574 103

IV. The decision under appeal was based on claims 1 to 12 filed with the letter dated 1 July 2004.

The independent claims 1 and 12 read as follows:

"1. A curable film-forming composition which when cured yields a resultant coating resistant to acid etching, comprising:

A) a polymer having a weight average molecular weight of 5000 to 15,000 as determined by gel permeation chromatography using a polystyrene standard, and having a glass transition temperature of at least

20 °C, said polymer prepared from the following ingredients:

- 1) 10 to 70 percent by weight, based on the total solid weight of monomers used to prepare the polymer, of a reaction product of an ethylenically unsaturated acid functional monomer and an epoxy compound containing at least 5 carbon atoms which is not polymerizable with the ethylenically unsaturated acid functional monomer;
 - 2) 5 to 50 percent by weight, based on the total solid weight of monomers used to prepare the polymer, of an ethylenically unsaturated, hydroxyalkyl functional monomer having from 2 to 4 carbon atoms in the hydroxyalkyl group;
 - 3) 15 to 40 percent by weight, based on the total solid weight of monomers used to prepare the polymer, of a vinyl aromatic monomer; and
 - 4) 10 to 60 percent by weight, based on the total solid weight of monomers used to prepare the polymer, of an alkyl ester of acrylic or methacrylic acid containing from 1 to 30 carbon atoms in the alkyl group, such that the sum of the weight percentages of the ingredients 1) 2), 3) and 4) is 100;
- B) an etherified aminoplast crosslinking agent; and
- C) an adjuvant curing agent comprising a tricarbamoyl triazine compound having the formula $C_3N_3(NHCOXR)_3$ in an amount of 1 to 20 percent by weight based on the total weight of resin solids in the film-forming composition, wherein X is oxygen or sulfur, and R is a lower alkyl group having one to

twelve carbon atoms or mixtures of lower alkyl groups."

"12. A multi-component composite coating composition comprising a base coat deposited from a pigmented film-forming composition and a transparent top coat applied over the base coat in which the transparent top coat is deposited from a clear film-forming composition according to any of the preceding claims, whereby the etherified aminoplast crosslinking agent is etherified with one or more alcohols selected from the group consisting of methanol, n-butyl alcohol, and isobutyl alcohol."

- V. The opposition division decided that the subject-matter of these claims was novel.

When assessing inventive step, document (D17) was considered to represent the closest prior art. The problem to be solved was to provide a coating composition having an improved acid etch resistance, using an inexpensive hydroxyl-aminoplast curing for use in a colour-plus-clear composite coating system. Document (D17) as such did not teach to use the hydroxyfunctional acrylic resin defined in claim 1. The monomer disclosed in document (D3) was known to improve etch resistance. However, the combination of the disclosures of documents (D17) and (D3) would not lead to polymers having molecular weights M_w and glass transition temperatures T_g within the ranges required for component A in claim 1. Documents (D4) and (D12) did not address the problem to be solved by the present invention. The opposition division concluded that the

subject-matter of the claims involved an inventive step.

VI. The following document was *inter alia* additionally cited during the appeal proceedings:

(D20) Research Disclosure No. 39 143, November 1996, 751-756, disclosed by K.-J. Wu and A. Essenfeld, Cytec Industries Inc.

VII. The Respondent (Patentee) did not amend the claims during the appeal proceedings. Hence, this decision is based on claims 1 to 12 filed with the letter dated 1 July 2004 (see point IV above).

VIII. The Appellant argued that the test report enclosed with the letter dated 12 August 2009 was filed so late that it did not have an opportunity to rework the experiments. This report was to show that the subject-matter of the present claims showed an advantageous effect with respect to the disclosure of document (D17). It could have been filed earlier because it was evident when the present claims were filed in 2004 that document (D17) represented the closest prior art.

During the oral proceedings before the Board, the Appellant considered document (D17) to represent the closest prior art.

This document disclosed all the features of present claim 1 except

- a copolymer A having a styrene content of from 15 to 40 % by weight, and
- the monomer component A1)

as defined in present claim 1.

The problem to be solved was to provide alternative coating compositions yielding coatings having a high acid etch resistance.

The person skilled in the art was informed by document (D3) that Cardura E10 modified acrylic resins were compatible with the compositions disclosed in document (D17) and provided those compositions with acid resistance. He would thus incorporate Cardura E10 modified acrylic or methacrylic acid into the monomer mixture disclosed in document (D17) in order to achieve a good acid etch resistance for the coatings obtained from that composition. He would not omit the hydroxyalkyl functional monomers disclosed in document (D17) because document (D20) taught that tricarbamoyl triazine reacted better with primary than with secondary hydroxyl groups. Document (D3) disclosed that the presence of styrene in the monomer mixture used to prepare Cadura E10 modified acrylic resins lead to lower colour. It was thus obvious to increase the styrene content when Cardura E10 was used, e.g. to a value of 25 % as disclosed in Table 4 of document (D3).

- IX. The Respondent (Patentee) considered document (D17) as the closest prior art. The problem to be solved was to further improve the acid etch resistance of the coatings resulting from the compositions claimed. The test report submitted under cover of the letter dated 12 August 2009 showed that this problem was solved.

The Appellant's arguments regarding document (D3) were based on hindsight because the coating of polymer LR-

3070 showed less acid etch resistance than that of LR-3050. This was due to the presence of crosslinks which are not sterically protected (i.e. to the hydroxyalkyl functional monomer units) in LR-3070 which led to a decrease in acid resistance.

The person skilled in the art looking for a coating with improved acid resistance would derive from the document (D3) that

- the optimum acid resistance was achieved for polymer LR-3050, i.e. a polymer devoid of hydroxy functional monomer units other than those produced by the reaction of Cardura E10 with carboxylic acid functional monomers, and
- would doubt that Cardura E10 gave rise to a beneficial effect in the presence of a melamine resin and a tricarbamoyl triazine crosslinker.

This would have lead him away from the present invention. Document (D20) showed in Table 3 that isocyanate crosslinkers yielded coatings with better acid etch resistance as compared to those crosslinked with a melamine resin and/or a tricarbamoyl triazine. Furthermore, this document showed that crosslinking agents behave differently depending on the type of hydroxyl groups in the acrylic polyol, so that the effect of adding a Cardura E10 modified monomer to the monomer mixtures of document (D17) could not have been foreseen.

- X. The other respondents (Opponents I and II) did not present any arguments during the appeal proceedings.

XI. The Appellant requested that

- the test report submitted by the Respondent (Patentee) with a letter dated 12 August 2009 was not admitted into the proceedings, and that
- the decision under appeal be set aside and the patent be revoked.

The Respondent (Patentee) requested

- the appeal be dismissed or
- that the decision under appeal be set aside and that the patent be maintained upon the basis of claims 1 to 12 filed with a letter dated 1 July 2004 and pages 2 to 10 of the adapted description filed during the oral proceedings on 15 September 2009.

The other respondents (Opponents I and II) did not file any requests during the appeal proceedings.

XII. The other respondents (Opponents I and II) had been duly summoned to the oral proceedings before the Board but were absent as indicated in their letters dated 18 August and 8 April 2009, respectively. The proceedings were thus continued in the absence of these respondents in accordance with Rule 115(2) EPC.

XIII. At the end of the oral proceedings, the decision of the Board was announced.

Reasons for the Decision

1. The appeal is admissible.
2. *The test report submitted with a letter dated 12 August 2009*

Article 114(2) EPC states that the EPO may disregard evidence which is not submitted in due time.

The test report was filed in order to demonstrate that the coatings made from the compositions according to the claims filed with the letter dated 1 July 2004 showed a better acid etch resistance as compared to those disclosed in document (D17). Document (D17) was submitted by Opponent I under cover of the letter dated 4 November 2003. In its letter dated 21 December 2005, the Appellant (then Opponent III) considered document (D17) as the closest prior art (see page 4, the second sentence under point 3). Consequently, the test report could have been filed earlier and cannot be considered to be "submitted in due time".

The test report was enclosed with the letter of the Respondent (Patentee) dated 12 August 2009. A proper reaction of the Appellant to this test report would have been the repetition of these tests or the preparation of different tests. Taking into account that tests with coating compositions as defined in the present claims require special chemicals and a careful selection of the polymerisation conditions, it seems to be unlikely that the Appellant could have prepared experimental tests in reply prior to the oral

proceedings before the Board which was held on 15 September 2009.

Hence, the Appellant could not reasonably be expected to deal with said test report without adjourning the oral proceedings.

Therefore, said test report was not admitted into the appeal proceedings (see Article 13(3) of the Rules of Procedure of the Boards of Appeal, Supplement to OJ EPO 1/2009, 41).

3. Article 123 EPC

Present claim 1 is based on claims 1, 12 and 13 as originally filed and on page 2, lines 28-33, page 4, lines 1-3 and page 12, lines 16-20 of the application as originally filed. Claims 2 to 11 are based on original claims 2 to 11. Claim 12 is based on original claim 14.

The granted claims have been restricted by requiring compound C) to be mandatory.

Hence, the amended claims do not contravene the requirements of Article 123 EPC.

4. Novelty

The Appellant did not dispute the novelty of the subject-matter claimed. Said subject-matter differs from that disclosed in document (D17) in that the acrylic polymers described in this document are made from monomer mixtures not containing a monomer A1) as

defined in present claim 1. It differs from that disclosed in document (D3) in that said document neither discloses acrylic polymers having molecular weights M_w of from 5 000 to 15 000, nor the presence of a tricarbamoyl triazine (see component C) according to present claim 1). Nor do any other cited documents disclose the subject-matter of the present claims. Hence, the Board is satisfied that the subject-matter of the present claims is novel.

5. Inventive step

5.1 Closest prior art

The Board concurs with the Appellant and the Respondent (Patentee) in that document (D17) represents the closest prior art.

Like the patent in suit, document (D17) relates to automotive coatings and seeks to improve their acid (etch) resistance (see paragraph [0004] of the patent in suit; (D17), column 1, lines 16-20 and 34-40).

This document discloses a curable coating composition comprising components B and C as defined in present claim 1, and a hydroxyfunctional acrylic resin (see claims 1 and 14 of document (D17)).

Said hydroxyfunctional acrylic resin differs from polymer A as defined in present claim 1 in that the monomer mixture used for making said resin does not contain monomer A1).

5.2 The problem to be solved

According to paragraph [0006] of the patent in suit it was "... an object of the present invention to provide a coating composition having improved acid etch resistance, utilizing inexpensive hydroxyl-aminoplast curing"

Document (D17) also uses a hydroxyl-aminoplast curing. Hence, this feature cannot contribute to the problem to be solved in view of this document.

When assessing whether or not the compositions according to the present claims yield coatings showing an improved acid etch resistance with respect to those made according to document (D17), the following has to be taken into account. The examples of the patent in suit are not covered by the present claims because no component C as defined in present claim 1 was used in the preparation of the respective coating compositions. The only example according to present claim 1 admitted into the proceedings is the last example listed in table I of the test report submitted under cover of a letter dated 6 June 2003. The Respondent (Patentee) did, however, not provide an example which permits a comparison of the acid etch resistance of a coating prepared from a composition according to the present claims with one prepared according to document (D17). Therefore, an improvement in acid etch resistance with respect to the closest prior art has not been shown.

The last example listed in Table I of the test report does, however, show that the compositions of the

present claims provide alternative coating compositions yielding coatings having a high acid etch resistance.

The problem solved in view of document (D17) as the closest prior art may thus be regarded as the provision of alternative coating compositions yielding coatings having a high acid etch resistance (see the fourth paragraph under point VIII above).

5.3 The solution

5.3.1 Document (D3) deals with acrylic resins in which the monomer units derived from acrylic or methacrylic acid have been modified by the reaction with Cardura E10 (which is the glycidyl ester of Versatic 10 acid). The document mentions that said modification "provides steric protection to the crosslink against hydrolysis (good acid resistance), ..." (see the third paragraph on page 2).

For this reason, the person skilled in the art would consider document (D3) when looking for alternative coating compositions yielding coatings having a high acid etch resistance.

In particular, document (D3) teaches that the acid resistance is significantly improved if all the hydroxyl groups in the acrylic resin to be crosslinked are those produced by the reaction of acrylic or methacrylic acid with Cardura E10 (see page 8, the first paragraph under the heading "Clear coat properties").

This is illustrated in Table 8 on page 8 by a comparison in acid etch resistance of coatings based on acryl resins LR-3050 and LR-3070. In LR-3050 all the hydroxyl groups are secondary hydroxyl groups produced by the reaction of acrylic acid with Cardura E10 (see Table 5 on page 7). In acrylic resin LR-3070, only half of the secondary hydroxyl groups are due to the reaction with Cardura E10; the remaining secondary hydroxyl groups are derived from hydroxypropyl methacrylate (which thus must be **2**-hydroxypropyl methacrylate)(see page 7, the first paragraph and Table 5). The coating based on acrylic resin LR-3050 shows a better acid resistance than that based on LR-3070. Document (D3) attributes this effect to the presence of the sterically less well-protected 2-hydroxypropyl groups in LR-3070 which give rise to crosslinks that are more easily hydrolysed, i.e. less resistant to acid etching (see page 8, the first paragraph under the heading "Clear coat properties"). This effect is so pronounced that the person skilled in the art looking for **alternative** coatings showing a **high** acid resistance could not disregard it (a decrease from 8 to 5 on a visual acid resistance scale of from 0 (totally damaged) to 10; see Table 8).

Therefore, the person skilled in the art would have modified both the acrylic resins disclosed in document (D17) by introducing a Cardura E10 modified monomer into the monomer mixture for preparing the same - as the Appellant argued - and would have omitted any monomers giving rise to less well-protected hydroxyl groups. That means that he would not have used hydroxyalkyl functional monomers such as the monomers A2) defined in present claim 1. Thus the person skilled

in the art would not fall within the teaching of said claims.

5.3.2 As the Appellant remarked, document (D20) teaches that the tricarbamoyl triazine TACT (namely a component C according to present claim 1) reacts better with primary than with secondary hydroxyl groups (see the fifth paragraph under point VIII above). However, this document only compares sterically less well-protected primary and secondary hydroxyl groups, namely hydroxyethyl and 2-hydroxypropyl groups (see the chapter "Backbone Selection" in the right column on page 752). Hence, this disclosure in document (D20) is not contrary to the teaching of document (D3) not to use monomers having any sterically less well-protected hydroxyl groups (such as 2-hydroxypropyl methacrylate; see the fourth paragraph of point 5.3.1 above) in order to yield coatings having a high acid etch resistance.

5.3.3 For these reasons, the subject-matter of present claim 1 involves an inventive step. The same applies to the subject-matter of dependent claims 2 to 11 which are directed to preferred embodiments of claims 1, and to that of claim 12 relating composites containing top coats made from the compositions of claims 1 to 11.

6. Adapted description

6.1 Main Request

During the oral proceedings before the opposition division, the Patentee submitted pages 2 to 10 of an amended description. The main request of the Respondent (Patentee) could only have been granted if this amended

description had been properly adapted to the present claims.

This was, however, not the case, *inter alia* for the following reasons:

Present claim 1 requires that the monomer A2) have 2 to 4 carbon atoms in the hydroxyalkyl group whereas page 2, line 47 of the amended description only mentions that this was "typically" the case.

Present claims 1 requires "that the sum of the weight percentages of the ingredients 1) 2), 3) and 4) is 100;" whereas the requirement to yield 100% is missing on page 2, lines 52-53.

For these reason, said description does not meet the requirement of Rule 42(1)(c) EPC that it is to "disclose the invention, as claimed, ...".

Consequently, the main request of the Respondent (Patentee), namely that the appeal be dismissed, is rejected.

6.2 Auxiliary Request

The Respondent (Patentee) submitted a description adapted to the amended claims during the oral proceedings before the Board. The Appellant did not object to the adapted description. The Board is satisfied that the amendments in the description merely serve to adapt it to the amended claims.

7. No other objection was raised by the Appellant during the appeal proceedings. Nor is the Board aware of any deficiencies of the patent in suit which could justify the revocation of the patent in suit amended according to the auxiliary request. For these reasons, the patent amended according to the auxiliary request meets the requirements of the EPC.

8. Remittal to the department of first instance
(Article 111(1) EPC)

In the present case, the Board cannot decide on the maintenance of the patent as amended because the prerequisites according to Rule 82(2) EPC, second sentence, are not yet fulfilled. Therefore, it remits the case to the department of first instance.

Order

For these reasons it is decided that:

1. The test report submitted by the Respondent (Patentee) with a letter dated 12 August 2009 is not admitted into the proceedings.
2. The decision under appeal is set aside.
3. The case is remitted to the department of first instance with the order to maintain the patent as amended in the following version:

Description

Pages 2 to 10 received during oral proceedings on 15 September 2009.

Claims

Claims 1 to 12 filed with the letter dated 1 July 2004.

The Registrar:

The Chairman:

M. Schalow

P. Ranguis