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D E C I S I O N
of 10 February 2004

Case Number: T 0566/01 - 3.3.3

Application Number: 95302149.0

Publication Number: 0675141

IPC: C08F 220/36

Language of the proceedings: EN

Title of invention:
Copolymer compositions containing hydroxyl functional (meth)acrylates and hydroxyalkyl carbamate (meth)acrylates and mixtures thereof

Patentee:
UNION CARBIDE CHEMICALS & PLASTICS TECHNOLOGY CORPORATION

Opponent:
PPG Industries, Inc.
BASF Corp.

Headword:
-

Relevant legal provisions:
EPC Art. 54(3)(4)
EPC R. 71(2)

Keyword:
"Novelty (yes)"

Decisions cited:
T 0572/88, T 0355/99

Catchword:
-

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BeschwerdekammernBoards of Appeal Chambres de recours

Case Number: T 0566/01 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 10 February 2004

Appellant: (Opponent I)
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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office announced 6 March 2001 and posted 14 March 2001 concerning maintenance of European patent No. 0675141 in amended form.

Composition of the Board:

Chairman: P. Kitzmantel
Members: C. Idez
E. Dufrasne

Summary of Facts and Submissions

I. The grant of the European patent No. 0 675 141 in the name of Union Carbide Chemicals & Plastics Technology Corporation in respect of European patent application No. 95 302 149.0 filed on 30 March 1995 and claiming priority of the US patent application No 220721 filed on 31 March 1994 was announced on 3 June 1998 (Bulletin 1998/23) on the basis of 10 claims.

Independent Claim 1 read as follows:

"A crosslinkable copolymer composition comprising (meth)acrylate copolymers based on the copolymerization product of (a) one or more hydroxyl functional (meth)acrylate monomers and
(b) one or more (meth)acrylate esters of hydroxyalkyl carbamates, with other (meth)acrylate comonomers."

Claims 2 to 10 were dependent claims.

II. Two Notices of Opposition were filed against the patent:

(a) by PPG Industries Inc. (Opponent I), on 3 March 1999, on the ground of lack of novelty (Article 54(3) and (4) EPC), and

(b) by BASF Corporation (Opponent II), on 2 March 1999, on the grounds of lack of novelty (Article 54(3) and (4) EPC).

The objections were supported by the following documents:

D1: WO-A-94/10211;

D2: WO-A-94/10212; and

D3: WO-A-94/10213.

III. By an interlocutory decision announced orally on 6 March 2001, and issued in writing on 14 March 2001, the Opposition Division held that the grounds of opposition did not prejudice the maintenance of the patent in amended form.

IV. The decision of the Opposition Division was based on Claims 1 to 12 submitted as main request during the oral proceedings of 6 March 2001.

Claim 1 read as follows:

"A crosslinkable copolymer composition comprising (meth)acrylate copolymers based on the copolymerization product of (a) one or more hydroxyl functional (meth)acrylate monomers and (b) one or more (meth)acrylate esters of hydroxyalkyl carbamates, with other (meth)acrylate comonomers, wherein the hydroxyl functional (meth)acrylate monomers and the (meth)acrylate esters of hydroxyalkyl carbamates are polymerized in amounts of each component of from 0.1 to 80 weight percent of the total copolymer composition."

In its decision the Opposition Division stated that the subject-matter of Claim 1 of the main request was novel over the disclosure of documents D1, D2, and D3.

More precisely, the decision held that Claim 1 was not directed to a blend but to the copolymerization product of components (a) and (b). It stated that, by carrying out the teaching of D1, the skilled person would not inevitably arrive at a result falling within the terms of Claim 1, since he would have to select specific embodiments within many options disclosed in D1. The decision further stated that the same conclusion would apply to documents D2 and D3, whose contents fully corresponded to those of D1.

V. A Notice of Appeal was lodged on 22 May 2001 by the Appellant (Opponent I) with simultaneous payment of the prescribed fee.

In the Statement of Grounds of Appeal filed on 23 July 2001, the Appellant argued essentially as follows:

(i) Although D1 generally related to a crosslinkable composition comprising a plurality of carbamate and/or urea groups, it was explicitly disclosed that acrylic polymers were preferred and that carbamate groups were preferred over urea groups.

(ii) Thus, the skilled person did not have to make selections to arrive at the preferred embodiments.

(iii) The acrylic materials of D1 were copolymers of (meth)acrylate comonomers as defined in Claim 1 of the contested patent.

(iv) All examples of carbamates functional vinyl monomers disclosed in D1 would fall under the definition of "(meth)acrylate esters of hydroxyalkyl carbamate" as defined in Claim 1 of the contested patent.

(v) Furthermore, D1 disclosed that hydroxyethyl or hydroxylpropyl (meth)acrylates might be copolymerized with the acrylic monomers. Even if this was not the most preferred embodiment, there was no prejudice preventing the skilled person from regarding hydroxyl group containing acrylic copolymers as an actual embodiment of D1.

(vi) Thus, although none of the examples of D1 disclosed a copolymer comprising both the hydroxyl and the carbamate functionality, this would represent an alternative which was directly and unambiguously derivable from D1.

(vii) The respective amounts of the comonomers specified in Claim 1 were broad. Thus, these features were inherently disclosed in D1.

(viii) Thus the subject-matter of Claim 1 lacked novelty over D1. The same conclusion applied to the subject-matter of Claims 5 to 7, 9, and 10 to 12.

VI. With its letter dated 30 November 2001, the Respondent (Patent Proprietor) submitted three sets of each 12 Claims as first, second and third auxiliary requests.

It also argued essentially as follows:

(a) Concerning the main request:

(i) There was no reference in D1 of a copolymer containing all three of the monomeric units as defined in Claim 1.

(ii) D1 disclosed several possibilities to introduce carbamate functionality in the copolymer, for example by copolymerizing the acrylic monomers with a carbamate functional vinyl monomer.

(iii) It was, however, clear that all the methods disclosed in D1 for introducing such functionality would not necessarily lead to pendant groups of formula (b) as defined in Claim 1.

(iv) D1 further indicated that hydroxyl groups were preferably not present. The copolymers disclosed in the examples of D1 did not contain both hydroxyl and carbamate functionality. Copolymers comprising both hydroxyl and carbamate functionality did not represent an alternative embodiment which was directly and unambiguously derivable from D1. When considering novelty it was not relevant to consider how a skilled person might alter the teaching of a document.

(v) Furthermore, D1 did not disclose that the components (a) and (b) according to Claim 1 were copolymerized in amounts from 0.1 to 80 wt% of the total copolymer.

(vi) Thus the subject-matter of Claim 1 and of the remaining dependent claims were novel over D1.

(b) Concerning the auxiliary requests:

(i) In Claim 1 of the first auxiliary request it had been made clearer that the invention related to a copolymer.

(ii) In Claims 1 of the second and the third auxiliary requests the definition of component (b) had been restricted. Such components (b) were not disclosed in D1.

VII. In its letter dated 28 October 2002, the Appellant argued essentially as follows:

(i) D1 disclosed specific hydroxyl alkyl monomers to impart hydroxyl functionality to the acrylic material. The term "acrylic material" in D1 clearly encompassed acrylic materials having carbamate functionality.

(ii) It was further clear that all the carbamate functional vinyl monomers exemplified in D1 fell under the definition of (meth)acrylate ester of a hydroxyalkyl carbamate, since this term did not restrict the type of substitution at the nitrogen atom of the carbamate group.

(iii) D1 disclosed the presence of comonomers (a) and (b) in the copolymer, i.e. each must be present in an amount greater than 0% but lower than 100% by weight. The range of 0.1 to 80% by weight of the

commoners (a) and (b) according to Claim 1 could not be regarded as novel, since this sub-range was not narrow and was arbitrarily chosen.

VIII. In its letter dated 23 December 2003, the Respondent essentially relied on its previous submissions and maintained that D1 did not directly and unambiguously disclose a crosslinkable acrylic material prepared by copolymerization of a hydroxyl functional (meth)acrylate, a carbamate functional (meth)acrylate and at least one other (meth)acrylate comonomer.

IX. Oral proceedings were held on 10 February 2004 in the absence of Opponent II.

The Appellant, while essentially relying on its previous submissions made in its letters dated 23 July 2001 and 28 October 2002, further argued in substance as follows:

(i) It was clear from D1 that acrylic polymers were preferred and that these polymers should preferably carry carbamate groups.

(ii) D1 further disclosed that hydroxyl functional acrylate monomers might be incorporated in the acrylic material.

(iii) Although there was no example in D1 of acrylic copolymers having both functionalities, the teaching of D1 was not restricted to its examples.

(iv) Furthermore, in Examples 2 and 3 blends of hydroxyl functional acrylic polymer with carbamate functional acrylic polymer had been used. Copolymers having both functionalities represented therefore an alternative within the general teaching of D1.

(v) Thus, D1 was a novelty destroying document for the subject-matter of Claim 1 of the patent in suit.

The Respondent, while also relying on its previous submissions, further argued essentially as follows:

(a) The reference to the use of hydroxyl functional monomers in D1 (cf. page 3, lines 26 to 30) was made in relation to the acrylic material and not to the acrylic polymer.

(b) The Appellant had argued that acrylic polymers and carbamate groups were preferred. In this connection it was however clear in view of page 2, lines 36 of D1, that the film forming composition of D1 should more preferably have a hydroxyl value of 0.

(c) It could also be seen from the examples of D1 (cf. Table I on page 24), that the presence of hydroxyl groups reduced the acid etch resistance of the coatings. Improving the etch resistance was, moreover, the aim of the compositions of D1 (cf. page 1, lines 7 to 9).

(d) Contrary to the submissions of the Appellant a copolymer was not equivalent to a blend comprising polymers based on the same monomers as the copolymer, and it would exhibit different crosslinking behaviour.

X. The Appellant requested that the decision under appeal be set aside and the patent be revoked.

The Respondent requested that the appeal be dismissed and the patent be maintained on the basis of Claims 1 to 12 as submitted during the oral proceedings of 6 March 2001 or alternatively on the basis of one of the 3 auxiliary requests submitted with its letter dated 30 November 2001.

Reasons for the Decision

1. The appeal is admissible.

2. *Procedural matters*

2.1 In a communication issued on 31 July 2003, all the parties (i.e. Opponent I, Opponent II and the Patent Proprietor) were duly summoned to oral proceedings scheduled to take place on 10 February 2004.

2.2 The oral proceedings took place on 10 February 2004. Opponent II being not represented herein (cf. Section IX above), the oral proceedings were continued in its absence according to Rule 71(2) EPC and to Article 11(3) of the Rules of Procedure of the Boards of Appeal.

Main request

3. *Articles 123(2) and 123(3) EPC*

3.1 Claims 1 to 12 of the main request correspond to Claims 1 to 12 on which the decision of the Opposition Division was based.

3.2 No objection under Articles 123(2) and 123(3) EPC had been raised either by the Appellant or by Opponent II against this set of claims. The Opposition Division has considered that these claims meet the requirements of Article 123(2) and 123(3) EPC. The Board sees no reason to depart from that view.

4. *Novelty*

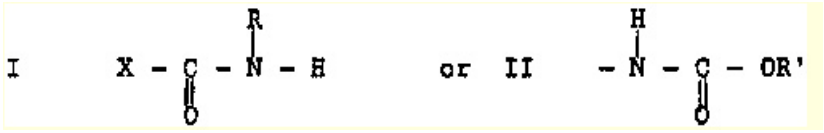
4.1 Lack of novelty of Claim 1 of the patent in suit has been alleged by the Appellant in the course of the appeal procedure only in view of document D1.

4.2 Document D1 which is based on the International Patent application PCT/US93/10172 filed on 25 October 1993 has been published on 11 May 1994, i.e. after the priority date claimed by the patent in suit (i.e. 31 March 1994).

4.3 In this connection, it is noted by the Board that the validity of the priority of the patent in suit has never been questioned by the Opponents, and that it has not been contested by the Patent Proprietor as to whether D1 fulfils the conditions set out in Article 158(2) EPC.

4.4 Thus, the Board sees no reason to depart from the view that document D1 belongs to the state of the art according to Article 54(3) and (4) EPC for the Contracting States DE, FR, GB and IT.

4.5 Document D1 generally relates to a crosslinkable film-forming composition comprising a material (I) containing a plurality of pendant or terminal groups of the structure:



where X is -N or -O and R is H or alkyl of 1 to 18, preferably 1 to 6 carbon atoms or R is bonded to X and forms part of a five- or six-membered ring and R' is alkyl of 1 to 18, preferably 1 to 6 carbon atoms; and (2) an aminoplast crosslinking agent containing methylol and/or methylol ether groups. The material of (1) has on average at least two pendant or terminal groups of the structure I and/or II, preferably structure I, per molecule. According to D1 X is preferably -0 in formula I. While the material of (1) may be an acrylic polymer, a polyester polymer or oligomer, a polyurethane polymer or oligomer, or a blend of two or more of these materials, acrylic polymers are preferred. D1 further mentions that, prior to crosslinking, the film-forming composition of (1) and (2) has a theoretical hydroxyl value of less than 50, and more preferably of 0 (cf. page 2, lines 18 to page 3, line 5).

As indicated in D1, the acrylic materials are copolymers of one or more alkyl esters of acrylic acid

or methacrylic acid, and, optionally, one or more other polymerizable ethylenically unsaturated monomers. Suitable alkyl esters of acrylic or methacrylic acid include methyl methacrylate, ethyl methacrylate, butyl methacrylate, ethyl acrylate, butyl acrylate, and 2-ethylhexyl acrylate (cf. page 3, lines 14 to 19).

D1 states that hydroxyl functional monomers such as hydroxyethyl acrylate, hydroxypropyl acrylate, hydroxyethyl methacrylate, and hydroxypropyl methacrylate may be copolymerized with the acrylic monomers to impart hydroxyl functionality to the acrylic material (cf. page 3, lines 26 to 30).

It further indicates that the carbamate functional groups of structure I (X = -0) may be incorporated into the acrylic polymer by copolymerizing the acrylic monomers with a carbamate functional vinyl monomer (e.g. a carbamate functional alkyl ester of methacrylic acid), that pendant urea groups of structure I (X = -N) may be incorporated into the acrylic polymer by copolymerizing the acrylic monomers with urea functional vinyl monomers, and that mixed pendant carbamate and urea groups may also be used (cf. page 3, lines 31 to 34; page 4, lines 20 to 23; line 29). There is however no general indication in D1 concerning the respective weight amounts of the hydroxyl functional monomer (if present), of the carbamate functional vinyl monomer (if present), and of the urea functional vinyl monomer (if present) in the acrylic copolymer.

4.6 More specifically document D1 discloses in its worked Examples 1, 6, 7, 8, 10 and 11 a crosslinking composition comprising as material (1) an acrylic copolymer having carbamate groups but no hydroxyl functionality, and in its Examples 2 and 3, a crosslinking composition comprising as material (1) a mixture of an acrylic copolymer having carbamate groups with an acrylic copolymer having hydroxyl groups.

4.7 In this connection, Claim 1 of the main request requires that the (meth)acrylate copolymer used in the claimed crosslinkable composition be based on the copolymerization product of:

(a) one or more hydroxyl functional (meth)acrylate monomers,

(b) one or more (meth)acrylate esters of hydroxyalkylcarbamates, with

(c) other (meth)acrylate comonomers,

wherein (a) and (b) are polymerized in amounts of each component of from 0.1 to 80 weight percent of the total copolymer composition.

4.8 According to the decision T 355/99 of 30 July 2002 (not published in OJ EPO), it is not sufficient for a finding of lack of novelty that the claimed features could have been derived from a prior art document, there must have been a clear and unmistakable teaching of the claimed features (Reasons, point 2.2.4). Furthermore, according to the decision T 572/88 of 27 February 1991 (not published in OJ EPO), assessment

of novelty should be strictly distinguished from that of inventive step (Reasons, point 4).

4.9 Thus, the question boils down as to whether there is in D1 a clear and unmistakable teaching of the combination of features mentioned above in paragraph 4.7 taking into account that the enabling disclosure of a document is not restricted to its worked examples.

4.10 In this connection, it is firstly evident (cf. paragraph 4.6 above) that Examples 1, 2, 3, 6, 7, 8, 10 and 11 of D1 cannot, as such, destroy the novelty of the subject-matter of Claim 1, at least for the reason that none of the acrylic copolymers disclosed therein exhibit both hydroxyl and carbamate functionality. In that respect, the argument of the Appellant that a copolymer having both functionalities would represent an equivalent of the respective blends disclosed in Examples 2 and 3 is not pertinent for the assessment of novelty, since interpreting a document as embracing equivalents which are not disclosed in the document is a matter of obviousness.

4.11 Secondly, it is clear that the material (1) according to D1 may be an acrylic copolymer or a mixture thereof, and that it contains a plurality of carbamate or urea groups and, optionally, hydroxyl groups, so that the preparation of the acrylic copolymers to be used in this material (1) encompasses at least the following options:

(i) incorporation or not of hydroxyl functional monomers,

(ii) incorporation or not carbamate functional vinyl monomers, and

(iii) incorporation or not of urea functional vinyl monomers.

4.12 While D1 expressly mentions at page 4, line 29, that the acrylic copolymer might contain urea and carbamate functionalities, there is, however, no indication of the simultaneous presence of hydroxyl groups and carbamate groups in a single acrylic copolymer. On the contrary, in the worked examples of D1 in which the acrylic material (1) comprises carbamate and hydroxyl functionalities, **blends** of a hydroxyl functional acrylic copolymer with a carbamate functional acrylic copolymer have been used.

4.13 Thus, in view of the several options which can be chosen for the preparation of the acrylic copolymers to be used in material (1) (cf. point 4.11 above), it cannot be concluded that, when an hydroxyl group functional comonomer is used, it will be inevitably associated with a carbamate functional vinyl comonomer in the same acrylic copolymer.

4.14 Even if it were, this would not imply, in view of the general disclosure of D1 (cf. paragraph 4.5 above), that the carbamate **vinyl** comonomer would inevitably be a **(meth)acrylate ester** of an **hydroxyalkyl**carbamate as defined in Claim 1 of the patent in suit, let alone that the hydroxyl functional monomer and the (meth)acrylate ester of an hydroxyalkylcarbamate would inevitably be present in an amount of 0.1 to 80 weight percent in the copolymer.

4.15 Consequently, the Board comes to the conclusion that D1 does not directly and unambiguously disclose the crosslinkable composition of Claim 1 of the main request and that the subject-matter of Claim 1 and, by the same token, that of dependent Claims 2 to 12 is novel over document D1.

4.16 Concerning the further documents D2 and D3, which have been cited in the opposition procedure by Opponent II, the Board notes that the definition of the acrylic copolymers which may be used in the crosslinkable compositions disclosed in D2 and D3 is the same as that of the acrylic copolymers of D1 (cf. D2, page 2, line 16 to page 4, line 22; cf. D3, page 6, line 30 to page 9, line 6), and that none of the examples of D2 and D3 disclose an acrylic copolymer comprising both carbamate and hydroxyl functionality. Thus, for the same reasons indicated above for document D1, these documents cannot destroy the novelty of the subject-matter of Claims 1 to 12.

5. In view of the above findings, the subject-matter of Claims 1 to 12 of the main request is novel over the disclosure of documents D1, D2 and D3.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

E. Görgmaier P. Kitzmantel