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**Datasheet for the decision
of 7 September 2011**

Case Number: T 0903/09 - 3.3.01

Application Number: 99972665.6

Publication Number: 1135444

IPC: C09D 133/14

Language of the proceedings: EN

Title of invention:

Curable compositions comprising acetoacetoxy and imine
functionality

Patentee:

The Sherwin-Williams Company

Opponent:

Akzo Nobel N.V.

Headword:

Curable compositions/THE SHERWIN-WILLIAMS COMPANY

Relevant legal provisions:

EPC Art. 123(2), 112a, 111(1), 101(3)(a), 100(a), 56, 54
RPBA Art. 12(4), 13(1)(3)

Relevant legal provisions (EPC 1973):

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Keyword:

"Main request - Inventive step - (no) - obvious solution"

"Auxiliary requests 1-4 - Added matter - (yes) - no basis in
the description as filed"

"Auxiliary requests 5-9 - Late-filed - not clearly admissible"

"Remittal - (no)"

"Postponement of the oral proceedings - (no)"

"Auxiliary requests 1-8 filed with the statement of grounds of
appeal - not admitted - diverging subject-matter"

Decisions cited:

-

Catchword:

-



Case Number: T 0903/09 - 3.3.01

DECISION
of the Technical Board of Appeal 3.3.01
of 7 September 2011

Appellant: Akzo Nobel N.V.
(Opponent) Velperweg 76
NL-6824 BM Arnhem (NL)

Representative: -

Respondent: The Sherwin-Williams Company
(Patent Proprietor) 101 W. Prospect Avenue
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Representative: Morf, Jan Stefan
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
12 February 2009 concerning maintenance of
European patent No. 1135444 in amended form.

Composition of the Board:

Chairman: P. Ranguis
Members: J.-B. Ousset
C.-P. Brandt

Summary of Facts and Submissions

- I. An appeal was lodged by the opponent against the decision of the opposition division to maintain European patent No. 1 135 444 in amended form.
- II. The opposition sought revocation of the patent in suit under Article 100(a) EPC (lack of novelty or inventive step).

In this decision the following numbering will be used to refer to documents:

- (1) EP-A-0 718 365
- (3) WO-A-96/37562

The opposition division held that the then pending main request contravened Articles 123(2) and 84 EPC as well as Rule 80 EPC. The then pending first auxiliary request contravened Article 123(2) and Rule 80 EPC. The second auxiliary request was found not inventive over documents (1) and (3). The patent in suit was maintained on the basis of claims 1 to 31 of the third auxiliary request. Claim 1 of this request reads as follows:

"1.A multi-component curable composition which is reactive upon admixing of the components and which comprises:

- (i) an acrylic polymer having acetoacetoxy functionality; and
- (ii) an acetoacetoxy functional derivative of a low molecular weight polyol; and
- (iii) a crosslinking component comprising at least

one imine functional compound having an average of at least two imine groups per molecule which are reactive with acetoacetoxy functionality."

The opposition division held, in particular, that document (1) did not disclose unambiguously a combination of acrylic polymer having acetoacetoxy functionality (claim 1 of document (1) is not restricted to acrylic polymers) with polyamine compounds capped with an aldehyde or ketone.

Regarding inventive step, the technical problem vis-à-vis document (1) could be seen in the provision of a coating composition based on an acrylic polymer having acetoacetoxy functionality and an acetoacetoxy functional derivative of a low molecular weight polyol in which the presence of compounds B (α , β -unsaturated compound), C (polyglycidyl compound), E (Lewis or Brönsted base) and F (polysiloxane) as requested in document (1) could be omitted, and which coating compositions have improved pot life and viscosity properties and provide coatings with good hardness and adhesion. The combination of the teachings of documents (1) and (3) did not render the subject-matter of claims 1 to 31 obvious.

III. In response to the statement of grounds of appeal, the respondent (patentee), in addition to his request that the appeal be dismissed, filed eight auxiliary requests.

Claim 1 of the first and the second auxiliary requests differed from claim 1 of the main request (claim 1 as maintained) in that the feature (i) related to an "acrylic polymer having acetoacetoxy functionality and

having an average of at least two pendant acetoacetoxy groups per molecule".

Claim 1 of the third and the fourth auxiliary requests differed from claim 1 of the main request in that the term "comprises" was replaced with "consists essentially of" and the optional features:

(iv) "optionally an amine functional compound having an average of at least two primary amine groups per molecule;"

(v) "optionally an organosilane;"

(vi) "optionally a monoepoxyde and/or a polyepoxyde; and"

(vii) "optionally pigments, flow agents, catalyst, diluents, solvents, UV light absorbers, and/or flexibilizers"

were added.

Claim 1 of the fifth auxiliary request differed from claim 1 of the main request in that the feature (iv) "an amine functional compound having an average of at least two primary amine groups par molecule" was added.

Claim 1 of the sixth and seventh auxiliary requests differed from claim 1 of the main request in that the term "comprises" was replaced with "consists essentially of".

Claim 1 of the eight auxiliary request differed from claim 1 of the main request in that the following feature was added:

"and wherein the imine crosslinker comprises the reaction product of an imine having at least one

primary or secondary amine group and a monoepoxyde and the reaction product of an imine having at least one primary or secondary amine group and a polyepoxyde having an average of at least two epoxy groups per molecule."

IV. Oral proceedings took place on 7 September 2011. After announcing that the subject-matter of the main request, which was identical to the set of claims found patentable by the opposition division, might not involve an inventive step, the board informed the respondent that the order in which the auxiliary requests had been filed in response to the statement of grounds of appeal might not be admitted into the appeal proceedings because the subject-matter of the third to eighth auxiliary requests diverged from the direction following down from the main request to the first and second auxiliary requests. With the agreement of the respondent, the oral proceedings were adjourned in order to give him the opportunity to consider the objection (see minutes).

The respondent filed in lieu thereof nine auxiliary requests.

Claim 1 of the first and second auxiliary requests before the board reads as follows:

"1.A multi-component curable composition which is reactive upon admixing of the components and which consists essentially of:

- (i) an acrylic polymer having acetoacetoxy functionality;

- (ii) an acetoacetoxy functional derivative of a low molecular weight polyol; and
- (iii) a crosslinking component comprising at least one imine functional compound having an average of at least two imine groups per molecule which are reactive with acetoacetoxy functionality;

and

- (iv) optionally an amine functional compound having an average of at least two primary amine groups per molecule;
- (v) optionally an organosilane;
- (vi) optionally a monoepoxide and/or a polyepoxide; and
- (vii) optionally pigments, flow agents, catalysts, diluents, solvents, UV light absorbers, and/or flexibilizers."

Claim 1 of the third and fourth auxiliary request before the board reads as follows:

"1.A multi-component curable composition which is reactive upon admixing of the components and which consists essentially of:

- (i) an acrylic polymer having acetoacetoxy functionality;
- (ii) an acetoacetoxy functional derivative of a low molecular weight polyol; and
- (iii) a crosslinking component comprising at least one imine functional compound having an average of at least two imine groups per molecule which are reactive with acetoacetoxy functionality."

Claim 1 of the fifth and sixth auxiliary requests before the board corresponds to the wording of claim 1 of the first and second auxiliary requests in which the expression "...consists essentially of..." has been replaced by the expression "...consists of..."

Claim 1 of the seventh, eighth and ninth auxiliary requests before the board corresponds to the wording of claim 1 of the third and fourth auxiliary requests in which the expression "...consists essentially of..." has been replaced by the expression "...consists of..."

V. The argument of the appellant (opponent) can be summarised as follows:

- Claim 1 of the patent in suit was not novel over document (1), which disclosed all the features of the claimed curable composition of the patent in suit.
- The majority of the monomers disclosed in document (1) were derivatives of acrylic or methacrylic acids and the acrylic polymers of the patent in suit were not necessarily made from acrylic monomers.
- The person skilled in the art following the teaching of document (1) would inevitably arrive at a composition containing an acrylic polymer having acetoacetoxy functionality.
- No multiple choices were required to arrive at the claimed compositions. The only selection was the

choice of the imine-blocked amine from the list of polyamine cross-linkers.

- Starting from document (1) as closest prior art and more particularly example 1, the person skilled in the art would replace the adduct isophorone diamine/bisphenol A in this example by an aldimine or a ketimine as mentioned in document (1) to arrive at the claimed subject-matter.
- The molecular weight of the acrylic polymer was not responsible for any technical effect.

VI. The respondent's arguments can be summarised as follows:

- The composition of example 1 of document (1) was not made by admixing - as required in claim 1 of the patent in suit - component (i) with component (ii) and the crosslinking agent used in this example was a polyamine derivative instead of a component having two imine groups in the molecule.
- The claimed compositions have an increased pot-life and a lower viscosity. This was not obvious in view of the disclosure of document (1).
- The auxiliary requests 1 to 8 should be admitted into the proceedings. The respondent had had no idea of the opinion of the board as to the admissibility of these requests before the oral proceedings. Otherwise, oral proceedings should be postponed or the case should be remitted to the

department of first instance. The respondent informed the board that he might consider filing a petition for review under Article 112a EPC regarding that issue. The board noted this point and postponed the discussion thereof to the end of the oral proceedings.

- The expression "consists essentially of" was introduced to identify more specifically the essential elements of claim 1 in accordance with the decision T 472/88.
- The amendments performed in auxiliary requests 5 to 9 did not raise any new issues.
- The replacement of the word "comprising" by the expression "consists of" did not contravene A. 123(2) EPC, since "comprising" meant "consists of".

VII. The appellant (opponent) requested that the decision under appeal be set aside and that European patent No. 1 135 444 be revoked; furthermore, he requested that auxiliary requests 5-9, filed during the oral proceedings not be admitted.

VIII. The respondent (patentee) requested that the appeal be dismissed, or, in the alternative, that auxiliary requests 1-8 filed with letter of 1 October 2009 be admitted in the proceedings, or that the oral proceedings be postponed, or that the case be remitted to the first instance for further prosecution, or that the patent be maintained on the basis of auxiliary

requests 1-9 submitted during the oral proceedings on 7 September 2011.

IX. At the end of the oral proceedings, the decision of the board was announced.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. Novelty

2.1 Document (1) discloses a binder composition which contains:

A₁ 5 - 75 wt.% of one or more C-H-acid compounds obtainable by radical polymerisation of one or more hydroxyfunctional and non-hydroxyfunctional ethylenically unsaturated monomers in the presence of one or more polyols optionally partly or completely in a form esterified with one or more β-keto carboxylic acid esters and one or more aliphatic β-keto carboxylic acid esters and subsequent transesterification of the hydroxy groups of the polymer and of the polyols with the contained β-keto carboxylic acid esters,

A₂ 0 - 60 wt.% of one or more C-H-acid compounds obtainable by transesterification of one or more polyols with one or more aliphatic β-keto carboxylic acid esters,

B 5 -75 wt.% of one or more α,β-unsaturated compounds with at least two groups having the formula



bonded to at least one additional group $R_1R_2C=CR_3-CO-$ via the radical of a dihydric or polyhydric alcohol, or a diamine or polyamine or amino alcohol, ...

C 2 - 40 wt.% of one or more polyglycidyl compounds,

D 5 - 70 wt. % of one or more polyamines with at least two amine functions, which are primary and/or secondary and can be capped, in the molecule, as a hardener,

E 0.01 - 10%, relative to the total weight of components A_1 , A_2 , B, C, D and F, of a catalyst in the form of a Lewis or Brönsted base, ... and

F 0.01 - 10 wt.% of one or more polysiloxane compounds ...

(see claim 1).

- 2.2 The hydroxyfunctional ethylenically unsaturated monomer used for obtaining the polymer in A_1 encompasses hydroxyalkyl esters of α,β -unsaturated carboxylic acids (see page 4, line 10). Although many hydroxyfunctional esters of acrylic acids are mentioned, the definition of α,β -unsaturated carboxylic acids is broader and encompasses monomers which do not lead to acrylic polymers, such as maleic or crotonic polymers (see page 4, line 21). Furthermore, the β -keto carboxylic acid esters may be acetoacetic esters (see page 3, lines 51-52) but are not limited to this specie. There is, therefore, not a complete overlap between the definition of the polymer contained in A_1 and the acrylic polymer having acetoacetoxy functionality of claim 1, i.e. feature (i). It is nevertheless noted that there is no difference due to the non-hydroxyfunctional ethylenically unsaturated monomer contained in the polymer of A_1 , since the acrylic

polymer (i) of claim 1 also contains that type of monomer (see patent in suit, page 3, lines 25 to 36). A₁ also contains polyols esterified with β-keto carboxylic acid esters. These polyols can be monomers (C₂ - C₁₂) or polymers having a molecular weight ranging from 1000 to 10000 (acrylic); 200 to 2000 (poly-ester, -ether, -urethane polyol) (see page 5, line 16 to page 5, line 15). The feature (ii) of claim 1 cannot distinguish them from the polyols esterified with β-keto carboxylic acid esters of A₁ since the term "low" is vague and from the description it is clear that polymers are also encompassed (see page 4, lines 4-5 of the patent in suit). However, it nevertheless represents a restriction given that the aliphatic β-keto carboxylic acid esters mentioned in document (1) are not limited to acetoacetic esters.

2.3 Although component D as a preferred embodiment can be capped with aldehyde or ketone to allow a better stability of the curable composition (see page 11, lines 35 to 43) there is still no unambiguous disclosure of A₁ as an acrylic polymer with a capped polyamine. Example 1, relied upon by the appellant, cannot rebut this finding because the diamine (adduct of bisphenol A and isophorone diamine) is not capped.

2.4 In conclusion, claim 1 and dependent claims 2 to 27 are novel. Furthermore, neither the appellant nor the board has any objection as regards the novelty of independent claim 28. Hence, this claim and dependent claims 29 to 31 are also novel (Article 54 EPC).

3. Inventive step

- 3.1 The patent relates to curable compositions useful as coatings which can be cured at room temperature providing fast-reacting, durable coatings having excellent adhesion (see [0002]).

Document (1) discloses a binder composition suitable for producing coating agents which can be rapidly hardened at low temperature, e.g. room temperature, to form films with good hardness and resistance to water and solvents, and very firm adhesion to metal substrates (see page 1, paragraph 9).

- 3.2 The board as well as the parties agree that document (1) represents the closest prior art since it aims at the same objective as the patent in suit.

- 3.3 The composition of document (1) comprises one or more C-H-acid compounds obtainable by radical polymerisation of one or more hydroxyfunctional and non-hydroxyfunctional ethylenically unsaturated monomers in the presence of one or more polyols optionally partly or completely in a form esterified with one or more β -keto carboxylic acid esters and one or more aliphatic β -keto carboxylic acid esters and subsequent transesterification of the hydroxy groups of the polymer and of the polyols with the contained β -keto carboxylic acid esters (A_1).

A_1 encompasses acrylic polymers such as those obtained by radical polymerisation of hydroxyl alkyl esters of α, β -unsaturated carboxylic acids, esterified by acetoacetic esters (transesterification). A_1 also

encompasses an acetoacetoxy functional derivative of a low molecular weight polyol due to the reaction of the polyol with acetoacetic esters (transesterification). Document (1) also mentions that polyimine derivatives can be used as crosslinking agents (see page 11, lines 38 to 40). Thus, the disclosure of document (1) differs from the one of claim 1 of the patent in suit in that these three constituents are not disclosed together in document (1). Claim 1 of the patent in suit represents a novel selection over the prior-art document (1).

- 3.4 The appellant submitted that the technical problem underlying the patent in suit can be seen in the provision of a multi-component curable composition which can be cured at low temperature and has excellent durability, adhesion and performance.

In view of the examples of the patent in suit, this problem has been credibly solved. A more ambitious technical problem could not have been acknowledged in the absence of a proper comparison between the invention and document (1), i.e. by a comparison with a curable composition involving a diamine (non-capped).

- 3.5 It remains to be decided whether or not the claimed subject-matter is an obvious solution to the technical problem defined above.

- 3.5.1 The approach of the board to assess the obviousness of the solution proposed by the patent in suit (the claimed subject-matter) differs fundamentally from the reasons for the decision of the opposition division (see point II above) and from the argumentation of the

appellant, in that in claim 1 the term "comprises" must be interpreted as encompassing all the specifically mentioned features as well as optional, additional, unspecified ones. The board therefore cannot agree with the decision of the opposition division and the argument of the appellant that the use of capped polyamines would lead to coating compositions in which components B, C, E and F could be omitted. Additional evidence for this is that the patent in suit provides coating compositions comprising organosilanes (component F, page 7, line 24). Non-obviousness cannot be based on a such finding.

3.5.2 On the contrary, since document (1) mentions that polyimine derivatives tend to lower the reactivity of the crosslinking agent towards the components to be cured and thereby increase the stability of the obtained cured composition (see page 11, lines 37 to 40), the person skilled in the art not only could but also would use polyimine derivatives as crosslinking agents and would thus replace the polyamines by a polyimine derivative to arrive at the claimed invention without any inventive skills.

3.6 The subject-matter of claim 1 is not inventive. Consequently, the main request is to be rejected as a whole for lack of inventive step (Article 56 EPC).

Auxiliary requests 3 to 8 filed with letter of 1 October 2009

4. Admissibility

4.1 In the current case, the board let the respondent know that in view of the order of the requests submitted by

him with his response to the statement setting out the grounds of appeal, it appeared that the then pending first and second auxiliary requests were converging in the sense that feature (i) of claim 1 of the main request had been further limited by the feature "...and having an average of at least two pendant acetoacetoxy groups per molecule...".

4.2 However, in the wording of the then pending third to eighth auxiliary requests, this limitation was no longer present and/or replaced by another limitation. Claim 1 of the third and fourth auxiliary requests diverge completely from the subject-matter of the first and second auxiliary requests, coming back to a multi-component curable composition "consisting essentially" of features (i), (ii) and (iii) defined in claim 1 of the main request.

Claim 1 of the fifth auxiliary request takes up the features "comprising (i), (ii) (iii)" as recited in claim 1 of the main request but adds another feature (iv).

Claim 1 of the sixth and seventh auxiliary requests might *prima facie* encompass different subject-matter from claim 1 of the first, second, third and fourth auxiliary requests, since on the one hand the limitation of the feature (i) as recited in claim 1 of the first and second auxiliary request is no longer present and on the other hand the term "consists essentially" does not refer to the optional features (iv), (v), (vi) and (vii).

Claim 1 of the eighth auxiliary request relates also to different subject-matter since although it recites the features of claim 1 of the main request it further

limits it in a different way by restricting the imine cross-linker (iii).

- 4.3 Article 12(4) of the Rules of Procedure of the Boards of Appeal (RBPA, see Supplement to OJ EPO 1/2011, 38 to 49) reads as follows:

"Without prejudice to the power of the Board to hold inadmissible facts, evidence or requests which could have been presented or were not admitted in the first instance proceedings, everything presented by the parties under (1) shall be taken into account by the Board if and to the extent it relates to the case under appeal and meets the requirements in (2)."

- 4.4 In the present case, none of the auxiliary requests was the object of the decision of the first instance. The respondent gave no reason why those requests were not submitted or maintained before that instance.

It is not denied that new requests can be filed in appeal proceedings. However, in the board's judgement the order of the requests should not be such that the discussion of a lower-ranking request has no basis in the discussion of the higher-ranking request.

The question regarding the first and second auxiliary requests would have been focused on the added feature "(i) an acrylic polymer having acetoacetoxy functionality and having an average of at least two pendant acetoacetoxy groups par molecule". The arguments of the parties and the conclusion of the board whether or not those requests fulfil the requirements of the EPC (Article 101(3) (a)) would have

had no bearing on the issues to be discussed for the lower-ranking requests.

5. Postponement of the oral proceedings

5.1 The respondent also requested that the oral proceedings be postponed in order to have sufficient time to respond to this objection.

5.2 The respondent was given time during the oral proceedings to take a position on this objection and was given by the board the possibility of renumbering his requests in view of the lack of convergence of auxiliary requests 3 to 8 (see minutes). Renumbering requests can be dealt with during an adjournment of the oral proceedings granted by the board.

5.3 The request for postponement of the oral proceedings is rejected.

6. Remittal

6.1 For the same reasons as set out above, the objection of the board regarding the order with which the auxiliary requests are presented cannot justify remittal to the department of first instance since it does not raise fresh issues.

6.2 The request for remittal to the department of first instance is rejected within the discretionary power of the board (Article 111(1) EPC).

First to fourth auxiliary requests filed during oral proceedings

7. Admissibility

7.1 These auxiliary requests correspond respectively to auxiliary requests 3, 4, 6 and 7, which were filed by the respondent with his letter of 1 October 2009.

7.2 In view of the objection raised on the basis of Article 12(4) RPBA, the respondent requested that new auxiliary requests 1 to 4 be admitted into the proceedings. These requests do not constitute new requests, in the sense that their content does not raise any new issues, since they correspond to a renumbering of some of the requests submitted by the respondent with his response to the statement setting out the grounds of appeal.

7.3 Since the appellant did not object to the admission of these requests into the proceedings, the board thus exercised its discretion according to Article 13(1) RPBA and admitted these requests, since they neither introduce at this stage of the procedure any new complex matter nor cause any delay of the procedure.

8. Article 123(2) EPC

8.1 With respect to claim 1 of the main request (see point II above), the feature "comprising" was replaced by "consisting essentially of". This feature is not explicitly disclosed in the application as originally filed, where the feature "comprising" is always mentioned (see, in particular, claim 1 and page 1, line 7). The question is nevertheless whether the person skilled in the art would regard the subject-

matter now claimed as implicitly but unambiguously disclosed in the application as filed.

8.2 Even it might be conceded as contended by the respondent, that the feature "consists essentially of" represents a limitation to identify more specifically the most essential elements of the invention, the question, which is different, is whether this new subject-matter meets the requirements of Article 123(2) EPC as defined above.

8.3 The respondent argued that this limitation aims at limiting the scope of claim 1 to constituents which do not affect the properties of the curable composition. This aims to exclude the constituents which do affect the properties of the curable composition. This argument must be understood in view of the application as filed, which defines the properties of the curable composition as follows:

"The curable compositions of this invention are especially useful as coatings, particularly primers. The reactive coatings of this invention can be cured at room temperature or force dried at temperatures ranging up to 350°F. The combination of acetoacetoxy functional materials and imine functional materials provide fast reacting, durable coatings having excellent adhesion."
(see page 1, lines 15 to 19).

8.4 From the content of the application as originally filed it does not emerge unambiguously which are the components which would affect those properties and, as a matter of fact, would be disregarded by the person skilled in the art. For instance, it does not emerge

unambiguously from the application as filed whether or not a polyglycidyl compound (see compound C of document (1)) affects the properties of the curable composition in the sense given above (passage in *italics*).

8.5 T 472/88, point 3, cited by the respondent, does not address the issue under Article 123(2) EPC but under Article 84 EPC and is, therefore, not relevant for the present case.

8.6 Since the first to fourth auxiliary requests do not meet the requirements of Article 123(2) EPC, they are to be rejected.

Auxiliary request 5 to 9 filed during the oral proceedings

9. Admissibility

9.1 The objection of the board regarding the admissibility of the requests filed with the response to the statement of grounds of appeal was directed not to the requests themselves but to the **order** in which they were presented. The board did not thereby give the respondent the opportunity to amend his case in a way raising fresh issues.

9.2 In the present case, no set of claims filed in response to the statement of grounds of appeal referred to curable compositions "consisting of".

9.3 Since the meaning of the word "comprising" is generally interpreted as encompassing all the specifically mentioned features as well as optional, additional,

unspecified ones, whereas the term "consisting of" only includes those features specified in the claim, the allowability of this amendment raises a fresh issue. In the absence of any explicit support, the question whether this feature can nevertheless be derived from the content of the application as filed requires a complete and substantial review thereof. That applies still more to requests 5 and 6, claim 1 of which relates to **specific** combinations of features (i), (ii) and (iii) with one or more features (iv) to (vii).

9.4 For this reason, those requests are not admitted into the proceedings in accordance with Article 13(3) RPBA.

10. Before closing the debate, after having verified the requests of the parties, the chairman asked the respondent whether he wanted to raise an objection about procedural defects (see point VI above). The respondent declared that he did not.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. European patent No. 1 135 444 is revoked.

The Registrar

The Chairman

M. Schalow

P. Ranguis