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**Datasheet for the decision
of 7 September 2023**

Case Number: T 0202/20 - 3.3.02

Application Number: 10704375.4

Publication Number: 2401336

IPC: C09D133/00, C09D133/06,
C09D151/00, C08F6/00

Language of the proceedings: EN

Title of invention:

LATEX EMULSIONS AND COATING COMPOSITIONS FORMED FROM LATEX
EMULSIONS

Patent Proprietor:

Akzo Nobel Coatings International B.V.

Opponent:

The Sherwin-Williams Company

Headword:

COATING COMPOSITIONS / AKZO NOBEL

Relevant legal provisions:

EPC Art. 56

Keyword:

Inventive step - all requests (no)

Decisions cited:

T 0552/89, T 0970/00, T 1014/07

Catchword:



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Case Number: T 0202/20 - 3.3.02

D E C I S I O N
of Technical Board of Appeal 3.3.02
of 7 September 2023

Appellant: The Sherwin-Williams Company
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
13 November 2019 concerning maintenance of the
European Patent No. 2401336 in amended form.**

Composition of the Board:

Chairman P. O'Sullivan
Members: M. Maremonti
L. Bühler

Summary of Facts and Submissions

I. The appeal lodged by the opponent ("appellant") lies from the interlocutory decision of the opposition division, according to which European patent No. 2 401 336 ("the patent") as amended in the form of auxiliary request 1, the claims of which had been filed by letter dated 16 August 2019, and the invention to which it relates, meets the requirements of the EPC.

II. Claim 1 of auxiliary request 1 found allowable by the opposition division reads as follows:

"1. A method of coating a can or packaging comprising:

(a) preparing a latex emulsion by a method comprising:

(i) mixing in the presence of a base comprising ammonia, dimethylethanolamine, 2-dimethylamino-2-methyl-1 propanol or a mixture thereof, an ethylenically unsaturated monomer component and a stabilizer comprising a strong acid, wherein the strong acid is selected from dodecylbenzene sulfonic acid, dinonylnaphthalene sulfonic acid, dinonylnaphthylenedisulfonic acid, bis(2-ethylhexyl)sulfosuccinic acid and mixtures thereof, in a carrier to form a monomer emulsion; and

(ii) reacting the monomer emulsion with an initiator to form the latex emulsion;

(b) reacting the latex emulsion with a neutralizer to form a coating composition; and

(c) *applying the coating composition to the can or packaging,*

wherein said ethylenically unsaturated monomer component includes at least one multi-ethylenically unsaturated monomer component effective to raise the molecular weight and crosslink the polymer."

III. An opposition was filed on the grounds of Article 100(a) to (c) EPC. The following documents were referred to, *inter alia*:

D1: GB 1 574 721 A

D2: WO 02/064691 A2

By letter dated 16 August 2019, the patent proprietor ("respondent") filed *inter alia* sets of claims according to a main request and auxiliary request 1.

The opposition division came to the following conclusion, *inter alia*:

- The subject-matter of claim 1 of the main request did not involve an inventive step starting from document D1 as the closest prior art.
- The subject-matter of claim 1 of auxiliary request 1 was novel over the disclosure in document D2 and involved an inventive step starting from D1 as the closest prior art.

IV. In its statement of grounds of appeal, the appellant contested the opposition division's reasoning and submitted, *inter alia*, that the subject-matter of claim 1 of auxiliary request 1 did not involve an inventive step.

V. In its reply to the statement of grounds of appeal, the respondent rebutted the appellant's arguments and maintained that the claim request found allowable by the opposition division met all requirements of the

EPC. It also filed further sets of claims labelled as auxiliary requests 2 to 4.

- VI. The parties were summoned to oral proceedings as per their requests. In preparation for the oral proceedings, the board issued a communication under Article 15(1) RPBA 2020, in which it expressed, *inter alia*, the preliminary opinion that the subject-matter of the respective claim 1 of each of the respondent's requests did not involve an inventive step starting from document D1 as the closest prior art.
- VII. By a subsequent letter, the appellant replied to the board's communication.
- VIII. Oral proceedings before the board were held on 7 September 2023 by videoconference in the presence of both parties.
- IX. Final requests relevant to the decision
- The appellant requested that the appealed decision be set aside and that the patent be revoked in its entirety. The appellant also requested that the opposition division's decision to admit auxiliary request 1 underlying the appealed decision into the proceedings be overturned.
- The respondent requested that the appeal be dismissed, meaning that the patent be maintained in amended form on the basis of the main request, which corresponded to the claims and description pages found allowable by the opposition division (auxiliary request 1 before the opposition division, hereinafter referred to as the main request). Alternatively, the respondent requested that the patent be maintained in amended form on the basis of the claims of one of the requests labelled auxiliary requests 2 to 4, filed with the reply to the statement of grounds of appeal.

X. The appellant's submissions, insofar as relevant to the present decision, are summarised as follows.

- Document D1, especially its disclosure in example 5, represented the closest prior art.
- The subject-matter of claim 1 of the main request differed from D1 only in that a multi-ethylenically unsaturated monomer was included in the monomer mixture used to prepare the latex emulsion.
- The feature of claim 1 stating that the multi-ethylenically unsaturated monomer was *effective to raise the molecular weight and crosslink the polymer* did not represent an additional step limiting the claimed method.
- This feature merely expressed the potential of the multi-ethylenically unsaturated monomer to raise the molecular weight of the produced polymer by crosslinking it. This was an intrinsic property pertaining to any multi-ethylenically unsaturated monomer.
- Moreover, the inclusion of other crosslinkers, such as melamine resins disclosed in D1, was not excluded by the subject-matter of claim 1.
- No technical effect was associated with the sole distinguishing feature so that the objective technical problem had to be seen as the provision of an alternative coating composition.
- Document D2 disclosed compositions for coating cans obtained by using a monomer mixture including *inter alia* allyl acrylates and methacrylates monomers, i.e. multi-ethylenically unsaturated monomers.
- Therefore, it would have been obvious for the skilled person looking for an alternative coating

composition to that of D1 to include these monomers of D2 in the monomer mixture of D1.

- Thus, it had to be concluded that the subject-matter of claim 1 of the main request lacked an inventive step in view of D1 in combination with D2.
- The same conclusion applied to the subject-matter of claim 1 of all auxiliary requests on file.

XI. The respondent's submissions, insofar as relevant to the present decision, are summarised as follows. For further details, reference is made to the reasons for the decision set out below.

- The method disclosed in example 5 of document D1 may be regarded as the closest prior art.
- The subject-matter of claim 1 of the main request differed from D1 in that a multi-ethylenically unsaturated monomer was included as crosslinker in the monomer mixture used to prepare the latex emulsion.
- Additionally, the claimed method implicitly differed from D1 also in that a crosslinking step took place during the formation of the latex emulsion and not thereafter as in example 5 of D1. This was clear in view of step (b) of claim 1 and the feature stating that the multi-ethylenically unsaturated monomer was "*effective to raise the molecular weight and crosslink the polymer*".
- Moreover, a crosslinking step using melamine resins as disclosed in example 5 of D1 was excluded from the subject-matter of claim 1.
- It was conceded that no technical effect was associated with these distinguishing features.

However, in view of examples 4 to 8 of the patent, the objective technical problem had to be seen as the provision of an alternative latex-based composition for coating a can or packaging having acceptable properties.

- Document D2 disclosed compositions for coating cans. However, allyl acrylates and methacrylates as possible monomers were disclosed in D2 only within a long list of compounds. No indication was given in D2 that these specific monomers could be used as crosslinkers.
- Therefore, according to the case law of the Boards of appeal, the combination of the teachings of D2 and D1 could have been done only by using impermissible hindsight.
- Therefore, it had to be concluded that the subject-matter of claim 1 of the main request involved an inventive step in view of D1 as closest prior art.
- The same conclusion applied to the subject-matter of claim 1 of all auxiliary requests on file.

Reasons for the Decision

Main request (auxiliary request 1 underlying the appealed decision) - inventive step pursuant to Article 56 EPC

1. The appellant requested that the main request not be admitted into the proceedings. At the oral proceedings, the board decided to admit the main request into the proceedings. However, since the final decision is in favour of the appellant (see below) there is no need for the board to provide its reasons in this regard.

2. Closest prior art

2.1 Both parties agreed that document D1, in particular example 5 thereof, represented the closest prior art.

2.2 D1 discloses in example 5 (page 16, lines 1 to 27) a method for producing a can coating, in which a premix comprising inter alia a base (dimethylethanolamine), ethylenically unsaturated monomer components (methyl methacrylate, styrene, butyl acrylate and hydroxy propyl methacrylate) and an amine salt of a dodecylbenzene sulfonic acid ("Siponate" DS-10) is added to a surfactant solution comprising in initiator (ammonium persulfate) to form a latex emulsion.

3. Distinguishing features

3.1 The board holds that the subject-matter of claim 1 differs from the above-mentioned disclosure in D1 only in that

i) the amine salt of dodecyl benzene sulfonic acid is obtained *in situ* by mixing dodecyl benzene sulfonic acid with an amine (in example 5 of D1, an ion exchange is carried out starting from the sodium salt of dodecyl benzene sulfonic acid), and

ii) the monomer component includes a multi-ethylenically unsaturated monomer.

3.2 At the oral proceedings, the respondent argued that the subject-matter of claim 1 was further distinguished from example 5 of D1 in that due to the presence of the multi-ethylenically unsaturated monomer acting as crosslinker, a crosslinking step took place during the formation of the latex emulsion (step a) ii)). This method step was implicitly included in claim 1 in view of the feature expressing that the multi-ethylenically unsaturated monomer was "*effective to raise the molecular weight and crosslink the polymer*". Moreover,

according to example 5 of D1, a crosslinking step occurred after the formation of the latex emulsion and its neutralisation. This step, carried out according to D1 by using a melamine formaldehyde resin (example 5, lines 25-26), was excluded from the wording of claim 1.

3.3 The board disagrees.

3.3.1 Claim 1 of the main request (wording under point II above) does not mention a crosslinking step. It merely requires that the ethylenically unsaturated monomer component includes at least one multi-ethylenically unsaturated monomer "**effective to raise the molecular weight and crosslink the polymer**" (emphasis added by the board).

3.3.2 The skilled person would have understood the term "effective to" to encompass the mere ability of the multi-ethylenically unsaturated monomer to raise the molecular weight of the polymer produced by the reaction and crosslinking it. In other words, the board concurs with the appellant that the above feature of claim 1 merely expresses an intrinsic property of the multi-ethylenically unsaturated monomer and not a crosslinking step further limiting the subject-matter of claim 1 over the above disclosure in example 5 of D1.

3.3.3 Furthermore, the method defined in claim 1 of the main request (point II above) is formulated by adopting an open language in view of the term "*comprising*". Therefore, further steps in addition to those explicitly claimed can also be included in the claimed subject-matter. In particular, step (b), requiring "*reacting the latex emulsion with a neutralizer to form a coating composition*" encompasses the possibility to add a crosslinker, e.g. a melamine resin as disclosed in example 5 of D1 (see above), to crosslink the latex.

- 3.3.4 It follows that the crosslinking step carried out according to example 5 of D1 by using a melamine formaldehyde resin (page 16, lines 25 to 27) is not excluded from the wording of claim 1.
4. Objective technical problem
- 4.1 The respondent (reply to the appeal, page 6, points 6.4 and 6.5) did not rely on distinguishing feature (i) (see above) for the formulation of the objective technical problem but only on the presence of at least one multi-ethylenically unsaturated monomer (distinguishing feature (ii) mentioned above). It submitted that examples 4 to 8 of the patent demonstrated that the use of such a multi-ethylenically unsaturated monomer allowed the production of a coating having acceptable properties.
- 4.2 The board notes that no comparison between the coating formulation of example 5 of D1 and a coating composition prepared by the method of claim 1 of the main request in terms of coating's properties is available. However, examples 4 to 8 of the patent demonstrate that a composition obtained by following a method according to claim 1 has acceptable properties in terms of spray, blush, colour and adhesion, and thus, that this composition can be used for coating a can or packaging. Even though these results were obtained by using specific multi-ethylenically unsaturated monomers in specific amounts, no evidence is available demonstrating that a composition suitable for coating a can or packaging may not be obtained across the whole scope of claim 1.
- 4.3 Therefore, the board concurs with the respondent that the objective technical problem is the provision of an alternative latex-based composition for coating a can or packaging having acceptable properties.

5. Obviousness of the claimed solution

5.1 As the solution to this technical problem, claim 1 proposes that the ethylenically unsaturated monomer component includes at least one multi-ethylenically unsaturated monomer.

5.2 The appellant referred, *inter alia*, to D2 as a document suggesting the claimed solution.

The respondent argued that document D2, while pertaining to the technical field of can coating, did not disclose to use a multi-ethylenically unsaturated monomer as crosslinker. It submitted that the crosslinkers taught in D2 were, as also in D1, without exception aminoplast resins, thus teaching away from the claimed use of a multi-ethylenically unsaturated monomer as a crosslinking agent. Multi-ethylenically unsaturated monomers were disclosed on page 9 of D2 only within a long list of possible monomers to be used for preparing a latex composition. No indication was present in D2 that these specific multi-ethylenically unsaturated monomers would have been suitable as crosslinkers. Therefore, the selection of these specific monomers from this long list for the purpose of solving the above-mentioned objective technical problem could be done only by knowledge of the invention, i.e. by the impermissible use of hindsight. In this respect, the respondent referred to the case law of the Boards of appeal, 10th Edition 2022, and in particular to the references to decisions T 970/00, T 1014/07, and T 552/89 contained therein.

5.3 These arguments are not convincing.

5.3.1 Document D2 (page 4, line 24, to page 5, line 13) discloses a method of preparing coating compositions to be applied *inter alia* to cans. The coating compositions of D2 contain polymer particles produced by emulsion

polymerisation *inter alia* from a mixture of aromatic monomers like styrene and acrylate and methacrylate monomers like e.g. methyl methacrylate, butyl acrylate and hydroxy propyl methacrylate (page 7, lines 3 to 11; page 9, lines 1 to 11; page 10, lines 6 to 9).

Therefore, the same monomers as used in example 5 of D1 (see above) can also be used in the coating compositions of D2. D2 further discloses (page 9, line 5) that allyl acrylates and methacrylates can also be part of the monomer mixture used to prepare the coating compositions.

5.3.2 Therefore, when seeking a solution to the posed objective technical problem, the skilled person would have found in D2 the indication that allyl acrylates and methacrylates, i.e. multi-ethylenically unsaturated monomers, can be used in combination with the monomers known from D1, to prepare a composition for coating a can. Hence, the skilled person would have been prompted by D2 to combine the teachings of D1 and D2, thereby using allyl acrylates and methacrylates as disclosed in D2 in the method of D1 and so arriving at the subject-matter of claim 1 of the main request. In fact, as argued by the appellant and not disputed by the respondent, it would have been known to the skilled person that multi-ethylenically unsaturated monomers, especially allyl acrylates and methacrylates as disclosed in D2, have the potential to crosslink the latex and raise its molecular weight. As explained above, they are thus "*effective to raise the molecular weight and crosslink the polymer*" within the meaning of claim 1 of the main request.

5.3.3 The fact invoked by the respondent that D2 does not disclose that the mentioned multi-ethylenically unsaturated monomers are to be used as crosslinkers is irrelevant since the objective technical problem is the

provision of an alternative coating composition and not the provision of an alternative crosslinking agent. Thus, any monomer disclosed in D2 is equally suitable to provide a solution to the posed technical problem and no pointer is required to select a specific one.

5.3.4 It is further noted that, as mentioned above, the addition of crosslinking agents, *inter alia* aminoplast resins, is not excluded from the subject-matter of claim 1. Therefore, the fact, invoked by the respondent, that the compositions known from D1 and D2 also include these crosslinkers (D1, example 5; D2, page 11, lines 14 to 15), would not have prevented the skilled person from combining the teachings of D1 and D2. On the contrary, it would have favoured this combination, since it would have further indicated that the teachings of D1 and D2 were mutually applicable.

5.3.5 The case law cited by the respondent cannot support its case either.

The case law of the Boards of appeal (10th Edition 2022), when referring to decision T 970/00 (I.D.6, point 6, page 219), states that

"any ex post facto analysis, and in particular any conclusion going beyond what the skilled person would have objectively inferred from the prior art, without the benefit of hindsight knowledge of the invention, is of necessity at variance with a proper application of the problem and solution approach. Any attempt to interpret the disclosure of the closest prior art so as to distort or misrepresent, based on hindsight knowledge of the invention, the proper technical teaching of the disclosure in such a way that it artificially meets specific features recited in the claim under consideration must fail".

This rationale is not applicable to the current case since, as set out above, the skilled person would have objectively inferred from D2 that multi-ethylenically unsaturated monomers, in particular allyl acrylates and methacrylates, might be included in the monomer mixture known from D1. No distortion or misrepresentation of the technical teaching of D2 is done by the skilled person when combining D2 with D1.

With reference to decision T 1014/07, the case law of the Boards of appeal (10th Edition 2022, I.D.9, point 9.4, page 272) states that

"For the determination of the obviousness or non-obviousness of claimed subject-matter, it is not decisive that teachings are known - it must be decided whether or not the skilled person would have combined the known teachings such as to arrive at the claimed subject-matter when attempting to solve the underlying technical problem. Thus, the combination of known teachings may result in non-obvious subject-matter, namely when the skilled person is not motivated, for example by promptings in the prior art, to make such a combination. Under these circumstances the presence of any special effect arising from the combination is not necessary to establish an inventive step".

Also this rationale cannot support the respondent's case since, for the reasons given above, the skilled person would have combined the teachings of documents D1 and D2 when seeking a solution to the posed objective technical problem.

Finally, by reference to decision T 552/89, the case law book of the Boards of appeal (10th Edition 2022, I.D.9, point 9.8, page 275) states that *"when assessing inventive step, it was not permissible to combine the teachings of different documents within the state of*

the art in order to establish the obviousness of a claimed invention, unless it would have been obvious for the skilled person to do so at the time of filing" and that "the teachings of secondary documents might be combined with the disclosure of the closest prior art if such secondary documents provided solutions to specific individual problems forming part of the objective problem in progressing from the closest prior art".

In line with this rationale, as explained by the board above, it would have been obvious for the skilled person to combine the teachings of D1 and D2 since D2 provided a solution to the objective technical problem posed when starting from D1 as closest prior art.

6. For these reasons, the board concludes that the subject-matter of claim 1 of the main request does not involve an inventive step in view of D1 as the closest prior art in combination with D2 (Article 56 EPC).

Therefore, the main request is not allowable.

Auxiliary requests

7. The appellant alternatively requested maintenance of the patent on the basis of the claims of auxiliary requests labelled 2 to 4.
 - 7.1 Claim 1 of auxiliary request 3 is identical to claim 1 of the main request. It follows that the board's considerations and conclusions in relation to inventive step of the subject-matter of claim 1 of the main request apply *mutatis mutandis* to claim 1 of auxiliary request 3.
 - 7.2 Claim 1 of auxiliary request 2 was amended compared to claim 1 of the main request by specifying that the multi-ethylenically unsaturated monomer is "*selected from allyl (meth)acrylate, tripropylene glycol*

di(meth)acrylate, diethylene glycol di(meth)acrylate, ethylene glycol di(meth)acrylate, 1,6-hexanedioldi(meth)acrylate, 1,3-butylene glycol (meth)acrylate, polyalkylene glycol di(meth)acrylate, diallyl phthalate, trimethylolpropane tri(meth)acrylate, divinylbenzene, divinyltoluene, trivinyl benzene, divinylnaphtalanene, and mixtures thereof".

Since allyl methacrylate is one of the monomers disclosed in D2 (see above) to be used for preparing the coating compositions, it follows that the board's considerations and conclusions in relation to inventive step of the subject-matter of claim 1 of the main request apply *mutatis mutandis* to the subject-matter of claim 1 of auxiliary request 2.

7.3 The same considerations and conclusions also apply to claim 1 of auxiliary request 4, which is identical to claim 1 of auxiliary request 2.

7.4 Therefore, the subject-matter of claim 1 of each of auxiliary requests 2 to 4 does not involve an inventive step within the meaning of Article 56 EPC. Thus, auxiliary requests 2 to 4 are not allowable.

Conclusion

8. None of the respondent's claim requests is allowable under Article 56 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



M. Schalow

P. O'Sullivan

Decision electronically authenticated