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Datasheet for the decision of 15 June 2021

Case Number: T 0037/17 - 3.3.02

Application Number: 08876403.0

Publication Number: 2183324

IPC: C09D5/00

Language of the proceedings: EN

Title of invention:
CLEARCOAT COMPOSITION FOR COATING ON WATERBORNE BASECOAT

Patent Proprietor:
PPG Industries Ohio, Inc.

Opponent:
BASF Coatings GmbH

Headword:

Relevant legal provisions:
EPC Art. 54, 56
RPBA Art. 12(4)

Keyword:
Novelty - main request (yes)
Inventive step - main request (yes)

Decisions cited:
T 0724/08

Catchword:

Europäisches Patentamt
European Patent Office
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Beschwerdekammern

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Case Number: T 0037/17 - 3.3.02

D E C I S I O N
of Technical Board of Appeal 3.3.02
of 15 June 2021

Appellant: (Opponent)	BASF Coatings GmbH Glasuritstrasse 1 48165 Münster (DE)
Representative:	Steffan & Kiehne Patentanwälte PartG mbB Patentanwälte Postfach 10 40 09 40031 Düsseldorf (DE)
Respondent: (Patent Proprietor)	PPG Industries Ohio, Inc. 3800 West 143rd Street Cleveland, OH 44111 (US)
Representative:	f & e patent Braunsberger Feld 29 51429 Bergisch Gladbach (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 13 October 2016 rejecting the opposition filed against European patent No. 2183324 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	M. O. Müller
Members:	P. O'Sullivan
	R. Romandini

Summary of Facts and Submissions

I. The appeal of the opponent (appellant) lies from the decision of the opposition division to reject the opposition against European patent 2 183 324.

II. The patent was opposed under Article 100(a) EPC on the grounds that its subject-matter lacked novelty and inventive step.

III. Among the documents cited in opposition proceedings, the following were invoked by the parties during appeal proceedings:

D1: WO 03/000812 A1
D2: EP 0 188 880 A2
D10: "Comparative test" filed by the respondent with the letter of 22 December 2015

IV. With the statement of grounds of appeal the appellant submitted the following documents:

D6: WO 00/73395 A1
D7: Reinhold Schwalm, UV Coatings - Basics, recent developments and new applications, December 21, 2006
D8: MSDS for "Envirobase T 494"
D9: Römpp Lexikon, "Lacke & Druckfarben"; 2-Butoxyethanol

V. With a communication pursuant to Article 15(1) RPBA, the board set out its preliminary opinion, in particular, that documents D6, D7, D8 and D9 were not to be admitted into the proceedings, and that the subject-matter of the main request was novel over D1.

VI. Oral proceedings by videoconference were held on 15 June 2021 in the absence of the appellant, as announced with the letter dated 14 May 2021.

VII. Requests relevant to the present decision

The appellant requests in writing that the contested decision be set aside and that the patent be revoked in its entirety.

The respondent (patent proprietor) requests that the appeal be dismissed, i.e. that the opposition be rejected and that the contested patent be maintained as granted. It furthermore requests not to admit D6, D7, D8 and D9 into the appeal proceedings.

VIII. The arguments of the appellant insofar as relevant to the present decision, may be summarised as follows:

Admittance - documents D6, D7, D8 and D9

D6 was identified by the appellant by chance only shortly before the filing of the statement of grounds of appeal, in preparation for other proceedings. It represented state of the art highly relevant to the issues of novelty and inventive step. D7 was filed as evidence of the knowledge of the skilled person. D8 was a material safety data sheet, while D9 was merely evidence of the boiling point of 2-butoxyethanol. D6

D7, D8 and D9 were therefore to be admitted into the proceedings pursuant to Article 12(4) RPBA 2007.

Novelty - Articles 100(a) and 54 EPC

The subject-matter of contested claim 1 lacked novelty over D1. In particular, the paragraphs in D1, page 6, lines 23-26 and 28-30 were to be read in combination. The first paragraph stated that the binder (A) comprised preferably two or more isocyanate reactive functional groups in the molecule. The second paragraph was concerned with the specific functional groups covered by the term "isocyanate reactive functional groups" mentioned in the first paragraph. Since thiol groups were mentioned among a list, a binder (A) having two or more thiol groups would necessarily constitute a polythiol, as required by the composition of contested claim 1, step (b).

Inventive step - Articles 100(a) and 56 EPC

The subject-matter of contested claim 1 lacked an inventive step in view of D1 as closest prior art in combination with D2.

IX. The arguments of the respondent insofar as relevant to the present decision, may be summarised as follows:

Admittance - documents D6, D7, D8 and D9

No reasonable justification had been provided by the appellant for the late filing of D6, D7, D8 and D9 with the statement of grounds of appeal. Accordingly, they were not to be admitted into appeal proceedings.

Novelty - Articles 100(a) and 54 EPC

Contested claim 1 was novel over D1, which at least failed to directly and unambiguously disclose a polythiol in a composition as required by claim 1, step (b).

Inventive step - Articles 100(a) and 56 EPC

The subject-matter of contested claim 1 involved an inventive step in view of D1 as closest prior art in combination with D2. The objective technical problem was the provision of a multilayer coating having enhanced properties in terms of a combination of higher hardness, higher gloss and better solvent and humidity resistance, without adversely affecting adhesion between a waterborne basecoat and a clear topcoat deposited thereon. The skilled person would not have combined the teaching of D2 with D1 in order to arrive at the subject-matter of claim 1.

Reasons for the Decision

1. Admittance - documents D6, D7, D8 and D9

1.1 These documents were filed by the appellant with the statement of grounds of appeal. The respondent requested that they not be admitted into appeal proceedings.

1.2 According to Article 12(4) RPBA 2007 (which applies to the present case in view of the transitional provisions laid down in Article 25(2) RPBA 2020, in force since

1 January 2020), the board has the discretion to hold inadmissible *inter alia* evidence which could have been presented in the proceedings before the opposition division.

1.3 D6

D6 is a patent document, invoked in an entirely new objection of lack of novelty with regard to claim 1 or alternatively, a new lack of inventive step objection starting from D6 as closest prior art (statement of grounds of appeal, pages 5-7 and pages 10-17).

1.3.1 As justification for the late filing of D6, the appellant submitted that it had been identified by chance only shortly before, in preparation for other proceedings. Furthermore, it represented highly relevant state of the art, and was therefore to be admitted into the proceedings (statement of grounds of appeal, page 5, second paragraph).

1.3.2 As set out by the board in the communication sent in preparation for oral proceedings pursuant to Article 15(1) RPBA, D6 forms the basis for entirely new objections against claim 1 at issue in respect of novelty and inventive step. The attacks related thereto consequently amount to a fresh case on the part of the appellant, in which different issues are raised compared to those upon which the decision of the opposition division was based.

1.3.3 Furthermore, *prima facie* relevance as referred to by the appellant is not one of the criteria listed in the Rules of Procedure (neither in the version of 2007 nor that of 2020) for the admittance of evidence in appeal proceedings. Hence, a board is not obliged to take the

relevance of a document into account when deciding on its admittance (see, e.g. T 724/08, Reasons, 3.4).

1.3.4 The appellant argued that D6 was only discovered in preparation for other proceedings. While amounting to an explanation as to why D6 was eventually identified, this does not constitute sufficient justification as to why D6 could not have been presented in the proceedings before the opposition division. In view of Article 99(1) in conjunction with Rule 76(2)(c) EPC, the relevant time limit for filing all relevant facts and evidence is the nine-month opposition period. This implies that a complete search for prior art must be made before the expiry of that time period. The identification of a document only much later, namely in preparation for subsequent appeal proceedings, is therefore not a proper justification for admitting this document.

1.3.5 Furthermore, admitting D6 would mean that an entirely new novelty and inventive step objection based thereon would have had to be examined for the first time in appeal proceedings. In such a situation, the appellant would be provided with the possibility to use the appeal proceedings as a second round of opposition proceedings. However, this would not be consistent with the primary purpose of appeal proceedings as a judicial review of the first instance decision (Article 12(2) RPBA 2020).

1.4 In view of these considerations, the board decided to exclude D6 from the appeal proceedings.

1.5 D7, D8 and D9

1.5.1 D7 is a review of recent developments and new applications in UV coatings and was invoked by the appellant in the context of inventive step, as a disclosure of the common general knowledge of the skilled person to be combined with D6 as closest prior art (statement of grounds of appeal, page 12, second full paragraph).

1.5.2 Similarly, D8 (a material safety data sheet) and D9 (proof of the boiling point of 2-butoxy ethanol) were submitted in the context of the same inventive step objection starting from D6 as closest prior art (statement of grounds of appeal, page 17, final paragraph).

1.5.3 Since the board decided not to admit D6 into appeal proceedings, it follows that the same conclusion must apply to D7-D9 when used in combination with D6 for the purpose of inventive step, since at least in this context, the individual documents belong to the same entirely new objection against contested claim 1.

1.5.4 Additionally, in the communication sent in preparation for oral proceedings, the board stated that it was unclear whether the appellant's arguments in respect of D7, D8 and D9 included an entirely new inventive step objection starting from D7 as closest prior art, in combination with D8 (supplemented by D9; see communication of the board 1.3.3 - 1.3.5; and point 4.2.3 of the respondent's reply, first paragraph). As stated by the board, if that were indeed the case, then with regard to the question of admittance, the same

considerations would appear to apply to D7, and as a consequence, to D8 and D9, as to D6.

The appellant did not address this issue in its subsequent letter dated 20 April 2021. In any case, the board's view on the admittance of D7, D8 and D9 is the same independently of whether these documents are invoked in combination with D6, or as the basis for a further entirely new inventive step objection starting from D7 as closest prior art, as was set out above for D6.

For these reasons the board decided to exclude D7, D8 and D9 from the appeal proceedings.

Main request

2. Novelty - Articles 100(a) and 54 EPC

2.1 Independent claim 1 reads as follows:

"*A process for forming a multilayer coating on a substrate comprising:*

(a) depositing a color-imparting waterborne basecoat composition on the substrate to form a basecoat layer;
(b) depositing an isocyanate-functional clear topcoat composition on the basecoat layer to form a clear topcoat layer; the topcoat composition comprising:
(i) a polyene, and
(ii) a polythiol;

the isocyanate functionality being derived as a separate component or being derived from an isocyanate functional polyene;

(c) *exposing the clear topcoat to radiation to cure the topcoat layer.*"

2.2 According to the appellant, the subject-matter of contested claim 1 lacked novelty over D1.

D1 is a patent document concerning so-called dual-cure coating materials, i.e. coating materials curable thermally and with actinic radiation (D1, page 47, first paragraph), comprising at least one binder (A) containing isocyanate-reactive groups and a crosslinking component (B) comprising free and/or blocked isocyanate groups (claim 1).

2.3 It is undisputed between the parties that similarly to contested claim 1, D1 discloses a process for forming a multilayer coating on a substrate comprising basecoat deposition step (a) of contested claim 1, and whereby an isocyanate functional clear topcoat composition is deposited onto the basecoat layer to form a clear topcoat layer (D1, page 44, line 28 - page 45, line 14). It is also not disputed that preparation example 1 of D1 ("*Herstellbeispiel 1*", page 49) describes the preparation of a hydroxyl-functional methacrylate copolymer (A), and that this polymer is a polyene, corresponding to component (i) in step (b) of claim 1. Furthermore, it is not disputed that said polymer comprises hydroxyl groups and is thus a polyol. The polymer of preparation example 1 of D1 thus corresponds to the composition of contested claim 1, step (b) with the exception that component (ii) is a polyol, not a polythiol.

2.4 Regarding the presence of a polythiol in the composition of D1, the appellant argued that D1 directly and unambiguously disclosed that binder (A) (D1, claim 1) *inter alia* could comprise a polythiol. In this regard, the appellant referred to page 6, lines 23-30 of D1, which concerns the type of isocyanate reactive functional groups which may be present as the main component of binder (A), and reads as follows:

"*Der erste wesentliche Bestandteil der erfindungsgemäßen Beschichtungsstoffe ist mindestens ein Bindemittel (A) mit im statischen Mittel mindestens einer, vorzugsweise mindestens zwei und insbesondere mindestens drei isocyanatreaktiven funktionellen Gruppe(n) im Molekül.*

Beispiel geeigneter isocyanatreaktiver funktioneller Gruppen sind Hydroxyl-, Thiol- sowie primäre und sekundäre Aminogruppen, insbesondere Hydroxylgruppen."

2.5 The appellant submitted that since the first paragraph of this citation states that the molecule preferably comprised at least "two or three isocyanate reactive functional groups", it followed that if thiol were to be selected as the isocyanate reactive functional group of choice from those listed in the second paragraph, then necessarily at least two or three thiol groups would be present in the binder (A). Such a component would qualify as a polythiol according to the definition provided therefor in the patent (paragraph [0031]), despite polythiols not being mentioned explicitly.

2.6 The board is of the following view. The passage in D1 cited above indeed specifies that the binder A should preferably contain at least two or three isocyanate-

reactive functional groups per molecule. The nature of said functional groups is disclosed in the following paragraph: thiol groups are mentioned along with hydroxyl groups and primary and secondary amino groups. However, there is no stipulation in this paragraph that at least two or more of said functional groups present in the binder A should be thiol, which would be required for the molecule to be considered as a polythiol. Therefore, it cannot be concluded that the mere mentioning of thiol groups alongside hydroxyl, primary and secondary amino groups as possible isocyanate reactive groups amounts to a direct and unambiguously disclosure of a binder (A) comprising two or more thiol groups, i.e. a polythiol. Furthermore, as noted by the respondent, there is no other indication or mention in D1 of specific polymers or compounds with thiol groups, or any example wherein a polythiol functional binder (A) is employed. For this reason alone, the novelty of contested claim 1 over D1 is acknowledged.

It follows from the foregoing that D1 does not directly and unambiguously disclose a composition comprising a polythiol as required by contested claim 1, step (b).

2.7 The appellant also submitted arguments according to which the subject-matter of claim 1 lacked novelty over the disclosure in D6. However, as set out above, the board decided not to admit D6 into the appeal proceedings.

2.8 It follows that the ground for opposition under Article 100(a) EPC in conjunction with Article 54 EPC does not prejudice the maintenance of the patent as granted.

3. Inventive step - Articles 100(a) and 56 EPC

3.1 Closest prior art

The parties were in agreement that D1 may serve as a suitable closest prior art document. The board sees no reason to depart from this view.

3.2 Problem solved

According to the patent, multilayer coatings for surfaces of automobiles and trucks having waterborne systems and high solids organic solvent-based systems have increased in popularity for environmental reasons. However, such coatings typically require heating to achieve the desired physical and chemical properties. This presented particular problems in the automotive market where curing ovens are not used, and coatings must attain the necessary properties at ambient temperature (patent, paragraph [0002]).

3.2.1 As set out above, the subject-matter of contested claim 1 at issue is distinguished from the disclosure in D1 at least in that the latter does not directly and unambiguously disclose a composition comprising a polythiol as required by contested claim 1, step (b).

3.2.2 As submitted by the respondent, the technical effect of this distinguishing feature over D1 is demonstrated in test report D10, filed by the respondent during opposition proceedings.

3.2.3 In the tests of D10, two samples were prepared. Sample A is a clearcoat formulation according to example 1 of the patent. Sample B is a formulation which differs

from sample A in that the 9-T dendrimeric (poly)thiol component is replaced by a hydroxy-functional polyester polyol. Sample B thus represents the teaching of D1. A waterborne basecoat formulation (ENVIROBASE T-3964) was sprayed onto a substrate to form a basecoat layer according to contested claim 1, step (a), and subsequently the clearcoat composition of samples A or B was applied. The coated panels were then exposed to UV radiation for 5 minutes. A thermal curing step was not performed. The samples were evaluated for gloss, surface hardness, solvent resistance, humidity resistance and adhesion to the underlying layer (D10, table, page 5). The results demonstrate that the clearcoat composition according to the patent, sample A, is superior to that of sample B in gloss, hardness, solvent resistance and humidity resistance (Table, "Appearance 24h after exposure"), without adversely affecting adhesion between the underlying waterborne basecoat of contested claim 1, step (a) and a clear topcoat layer deposited thereon (both samples: 100% adhesion). Accordingly, D10 demonstrates that said improved properties were achieved as a result of the distinguishing feature over D1, without the need for thermal curing by heating (patent, paragraph [0002]).

3.2.4 The appellant argued that the comparison drawn in the test of D10 was not suitable for demonstrating a technical effect over D1 since the 9-T dendrimeric thiol (a polythiol) of example 1 of the patent (D10, page 1, clearcoat formulation A) had been replaced with a hydroxyl-functional polyester (D10, page 1, clearcoat formulation B). Since said 9-T dendrimeric thiol and hydroxyl-functional polyester differed from each other in more than the replacement of the thiol groups with hydroxyl groups, it could not be stated that the effect obtained (D10, table) originated in said replacement,

and therefore in the distinguishing feature of the claimed subject-matter over D1.

3.2.5 The board does not find the appellant's argument convincing. The polyester employed in clearcoat formulation B of D10 falls within the definition of the binder (A) which may be employed according to D1 (e.g. page 16, line 29 - page 17, line 25). Indeed *inter alia* polyesters are highlighted in D1 as being particularly advantageous (page 8, lines 1-3). As such, the hydroxyl-functional polyester polyol of D10, sample B represents a reasonable point of comparison with the 9-T dendrimeric thiol of example 1 of the contested patent.

3.2.6 In view of this, the objective technical problem underlying the subject-matter of claim 1 is the provision of a process for providing a multilayer coating having improved properties in terms of hardness, higher gloss, and solvent and humidity resistance, without adversely affecting adhesion between the respective layers.

3.3 Obviousness

3.3.1 The appellant submitted that the claimed subject-matter lacked inventive step in view of a combination of D1 with D2.

3.4 Although D1 itself discloses in general terms that thiol functional groups may be used as an isocyanate-reactive functional group in the binder (A) (page 6, lines 23-30), D1 lacks any teaching or incentive which would motivate the skilled person to replace binder (A) of example 2 of D1, comprising a polyol, with a

corresponding binder comprising a polythiol, with a view to solving the problem posed above.

3.4.1 D2 discloses conformal coating systems for application on printed circuit boards (page 1, first paragraph). The coating composition of D2 comprises *inter alia* (i) a multifunctional alkene, (ii) a multifunctional thiol and (iii) a multifunctional isocyanate, wherein components (ii) and (iii) may be present on the same molecule (claim 1; page 3, second paragraph - page 4, first paragraph). According to D2, conformal coatings were known in the prior art and were cured by exposure to UV. Thermal curing was required for areas which were not exposed to UV, so-called "shadow regions". The heat required was however not desirable as it may have a deleterious effect on the substrate (page 2, first to third paragraphs). According to D2, this problem was solved by the compositions thereof, which could be cured by exposure to low intensity UV at ambient temperatures, allowing the coating of thermally sensitive substrates (D2, page 4, second paragraph).

It was not disputed by the respondent that D2 disclosed a composition falling within the definition of contested claim 1, step (b) including a polyene (i) and a polythiol (ii).

3.4.2 The appellant submitted that the printed circuit board of D2 was to be understood as a "layer" upon which the protective layer disclosed therein was to be applied; D2 thus concerned multilayer coatings. Accordingly, the skilled person would have considered applying the coating composition of D2 in the multilayer coating of D1, and would thereby have arrived at the subject-matter of claim 1 at issue.

3.4.3 The board does not share the appellant's view. D2 is not at all related to multilayer coatings, let alone multilayer coatings comprising a waterborne basecoat layer as required by contested claim 1. The coating of D2 is in fact directed to a different objective, namely to act as a protective layer in order to avoid or minimise degradation of electrical performance due to contamination of the electric components, in particular by moisture or humidity (D2, page 1, paragraph 2). The single layer in D2 is thus intended to protect the underlying printed circuit boards and electronic components from degradation caused by humidity. This is different from what is relevant to the objective technical problem defined above, namely the ability of a multilayer coating as such to resist degradation and retain its appearance when exposed to humidity.

3.5 The board acknowledges that, as noted by the appellant, D1 refers to the coating of electrotechnical components, ("elektrotechnische Bauteile"; page 1, line 15). However, these are mentioned with respect to motor coils and transformer coils ("Motorwicklungen oder Transformatorwicklungen; page 46, lines 18-19), which are not the same as electronic components and specifically printed circuit boards on which D2 focuses. Hence, contrary to the appellant's assertion, the mentioning of electrotechnical components in D1 would not incite the skilled person to apply to the coating disclosed in D2 in the coating process disclosed in D1.

Finally, the objective technical problem as set out above seeks to provide a multilayer coating with improved properties associated with the coating itself. Since D2 does not concern multilayer coatings at all, it also cannot suggest to the skilled person that the

above-mentioned problem can be solved by the measures set out in contested claim 1. More specifically, there is no motivation nor pointer in D2 which would motivate the skilled person to replace a polyol, used in example 2 of D1, with a polythiol according to contested claim 1, step (b), in order to provide improved properties in a multilayer coating without adversely affecting adhesion.

For these reasons, the subject-matter of claim 1 and in consequence, claims 2-7 dependent thereon, involves an inventive step.

3.6 The appellant also submitted inventive step objections starting from D6 as closest prior art in combination with D7, D8 and D9. However, as set out above, the board decided to exclude these documents from the appeal proceedings pursuant to Article 12(4) RPBA 2007.

3.7 It follows that the ground for opposition under Article 100(a) EPC in conjunction with Article 56 EPC does not prejudice the maintenance of the patent as granted.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

N. Maslin M. O. Müller

Decision electronically authenticated