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**Datasheet for the decision
of 22 July 2022**

Case Number: T 1960/19 - 3.3.06

Application Number: 08858451.1

Publication Number: 2235118

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Language of the proceedings: EN

Title of invention:

Method of application of multifunctional photocatalytic and
sanitary paints

Patent Proprietor:

Advanced Materials - JTJ s.r.o.

Opponent:

Omya International AG

Headword:

Paint coat/ADVANCED MATERIALS

Relevant legal provisions:

EPC Art. 111(1), 123(2)

RPBA 2020 Art. 11

Keyword:

Oral proceedings - express withdrawal of request for oral proceedings

Amendments - extension beyond the content of the application as filed - no

Remittal - yes

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 1960/19 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 22 July 2022

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 16 May 2019
revoking European patent No. 2235118 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman J.-M. Schwaller
Members: L. Li Voti
R. Cramer

Summary of Facts and Submissions

I. The appeal of the patent proprietor is against the decision of the opposition division to revoke European Patent no. 2 235 118 on the grounds that the respective claim 1 of all the requests on file infringed the requirements of Article 123(2) EPC.

II. The claims as granted read as follows:

"1. A method to prepare a multifunctional paint coat with photocatalytic and sanitary effects, characterized by the fact that the TiO₂ nanoparticles are mounted onto a highly porous inorganic substance, wherein the porous inorganic substance is created by a chemical reaction of at least two components in the presence of the TiO₂ nanoparticles, wherein the first component is a water insoluble compound of calcium and the second component is a water solution of sulfate selected from the group of copper sulfate, zinc sulfate, silver sulfate or their mixtures, and wherein this dried paint coat contains 5 to 90 weight percent of the TiO₂ nanoparticles and its thickness is in the range from 0.1 to 100 µm."

"2. The method to prepare the multifunctional paint coat according to the claim 1, characterized by the fact that the insoluble calcium compound is selected from the group of nano-calcium carbonate, lime, calcium hydroxide and mixtures thereof."

"3. The method to prepare the multifunctional paint coat according to claims 1 and 2, characterized by the fact that the weight ratio of the second component

(sulfate) to the first component (insoluble calcium compound) is from 0.1:1 to 10:1."

"4. The method to prepare the multifunctional paint coat according to claims 1 to 3, characterized by the fact that a water suspension of the first component is deposited on the treated area; and subsequently the TiO₂ nanoparticles suspended in a water solution of the second component is applied on the top of the first layer."

"5. The method to prepare the multifunctional paint coat according to claims 1 to 3, in one step, characterized by the fact that the reacting mixture of the first component, the second component and TiO₂ nanoparticles in water are altogether deposited on the treated surface."

"6. The method to prepare the multifunctional paint coat according to claims 1 to 3, in two steps, characterized by the fact that the water suspension of the first component and TiO₂ nanoparticles is deposited on the treated area and subsequently the water solution of the second component is applied over the first layer."

"7. The method to prepare the multifunctional paint coat according to claims 1 to 3, on surfaces rich in insoluble calcium compounds namely stucco and concrete, characterized by the fact that the TiO₂ nanoparticles suspended in the water solution of the second component are applied on the treated surfaces."

"8. The method to prepare the multifunctional paint coat according to claims 1 to 7, wherein the paint coat

is manufactured and applied at the temperature from 10 to 50 °C."

"9. The method of cleaning the surfaces covered with the multifunctional paint coat prepared according to claims 1 to 8, characterized by the fact that the cleaning of the paint coat and refreshing of its functionality is realized by occasional illuminating of the painted area with an intensive UV light source."

"10. The method of odor removal, namely in the rooms with insufficient ventilation, characterized by the fact that the multifunctional paint coat prepared according to claims 1 to 8 is applied on the room ceiling, forced air turbulence is created at the ceiling and the painted area is illuminated with UV light."

- III. With its statement of grounds, the appellant maintained that the claims of the requests on which the decision was based complied with the requirements of Article 123(2) EPC. As regards the further grounds for opposition not addressed in the impugned decision, it referred to its submissions of 11 February 2019, a copy of which was attached.
- IV. The respondent and opponent submitted in its reply inter alia that the claims as granted contravened the requirements of Article 123(2) EPC.
- V. Following the board's preliminary opinion that the claims as granted appeared to comply with the requirements of Article 123(2) EPC and that it was appropriate to remit the case to the opposition division, the respondent submitted further arguments and calculations with letter of 24 May 2022.

- VI. With letter of 21 June 2022 the respondent announced that it would not attend the scheduled oral proceedings.
- VII. With letter of 24 June 2022, the appellant contested the admissibility of the new arguments and calculations submitted on 24 May 2022 and filed revised versions of auxiliary requests 2, 3, 6 and 7; it also re-filed all other requests. Finally, with a letter dated 11 July 2022, it withdrew its request for oral proceedings with the proviso that the case be remitted to the first instance as provisionally announced by the board.
- VIII. With letter of 13 July 2022 the respondent also withdrew its request for oral proceedings.
- IX. As both parties had expressly withdrawn their request for oral proceedings, the board was in a position to cancel them and to decide in writing.
- X. The parties' requests as appearing from the file are the following:

The appellant and patent proprietor requests that the decision under appeal be set aside and the opposition be rejected (main request) or, in the alternative, that the patent be maintained in amended form on the basis of one of auxiliary requests 1 to 7 filed with letter of 24 June 2022.

The respondent and opponent requests that the appeal be dismissed. Auxiliarily it requests that the case be remitted to the opposition division if any of the appellant's requests is found to fulfil the requirements of Article 123(2) EPC.

Reasons for the Decision

1. *Main request (patent as granted) - Compliance with the requirements of Article 123(2) EPC*
- 1.1 Claim 1 of this request concerns a method for the preparation of a multifunctional paint coat with photocatalytic and sanitary effects characterised by the features:
 - (a) TiO₂ nanoparticles are mounted onto a highly porous inorganic substance created by a chemical reaction of at least two components in the presence of the TiO₂ nanoparticles,
 - (b) the first component being a water insoluble compound of calcium and the second component being an aqueous solution of copper sulfate, zinc sulfate, silver sulfate or mixtures thereof,
 - (c) the dried paint coat containing 5-90 wt% of TiO₂ nanoparticles and
 - (d) having a thickness in the range from 0.1-100 µm.
- 1.2 The claims of the application as filed (reference is made here to WO 2009/074120 A2) relate to a multifunctional paint and methods for its application but not explicitly to its preparation.
- 1.2.1 However, the description (page 1, lines 6-9 and page 11, line 17) discloses in a generic way that the invention relates to multifunctional paints based on TiO₂ nanoparticles with photocatalytic and sanitary effects and to its application onto various surfaces thus forming multifunctional coatings having desired properties. Therefore, the application relates manifestly also to the preparation of a multifunctional paint coat having photocatalytic and sanitary effects as recited in claim 1 at issue.

1.2.2 Furthermore the description discloses (page 3, lines 6-13 and 17-18) that such multifunctional paint (used in the preparation of multifunctional coatings) consists of TiO_2 nanoparticles mounted onto a highly porous inorganic substance obtained by chemical reaction of at least two components, the first one being a water insoluble compound of calcium and the second one being a water solution of copper sulfate, zinc sulfate, silver sulfate or mixtures thereof. Further, it is derivable from the overall description exposing the various methods for applying the paint onto a surface with formation of a paint coat (page 3, line 28 to page 4, line 14; page 4, line 28 to page 5, line 9; examples 1-5), that TiO_2 nanoparticles are present during the reaction leading to the formation of the highly porous inorganic substance upon which the inert TiO_2 nanoparticles are deposited.

Therefore also in the dried paint coat the TiO_2 nanoparticles are mounted onto the described highly porous inorganic substance, as required by features (a) and (b) of claim 1 at issue.

1.2.3 Moreover, the already cited passage at page 3, lines 20-22 discloses that the paint preferably contains 5 to 90 wt% of TiO_2 in the solids **creating** a photocatalytic layer in the range of 0.1-100 μm . The board agrees in this respect with the appellant and the contested decision that the photocatalytic layer is a dried paint coat (the drying of the applied paint is for example explicitly disclosed in examples 2 to 5 and claim 4 as filed, and so such a thickness relates inevitably to the photocatalytic paint coat). Therefore feature (d) is also explicitly disclosed in combination with features (a) and (b).

1.2.4 As regards feature (c) requiring that the dried paint coat contains 5-90 wt% of TiO₂ nanoparticles, the respondent submitted in one line of reasoning that the term "solids" recited in the above-cited passage at page 3, and thus the disclosed TiO₂ nanoparticles amount, would refer to the educt and not to the reaction product since the description (page 3, lines 25-26) discloses that the multifunctional paint favorably contains 3 to 80 wt% of nano-calcium carbonate in the solids, with nano-calcium carbonate being one of the components still to be reacted to form the porous inorganic support for the TiO₂ nanoparticles. Also this disclosure does not specify if the addressed nano-calcium carbonate content in the solids relates to the educt or to the reaction products.

However, the preceding and following passages of the description (page 3, lines 9-16 and page 5, lines 11-20) state that the paint is made of the TiO₂ nanoparticles and the highly porous inorganic substance obtained by reaction of, for example, nano-calcium carbonate, which thus after reaction is no longer present as such in the paint or is still present therein in minor amounts as unreacted solids (see example 1, line 23). Therefore the above-cited passage of page 3 relating to the content of TiO₂ nanoparticles **in the paint** can only be understood as disclosing its content related to the solids content of the reaction products.

1.2.5 The respondent argued that the amount of solids in the paint and in the dried paint coat would be necessarily different and that therefore the disclosed content of TiO₂ nanoparticles in the paint would not correspond to that in the paint coat.

The board cannot accept this argument because the only solids contained in the multifunctional paint are by definition the TiO₂ nanoparticles and the highly porous inorganic substance obtained by means of the described reaction. The release of carbon dioxide during the reaction mentioned by the respondent has no influence on the calculation of the solids content in the paint coat since the highly porous inorganic substance includes all solids formed by such a reaction (after carbon dioxide release) as well as, possibly, some unreacted solids (see for example page 4, line 28 to page 5, line 2; page 5, lines 15-20; page 6, lines 23-30; page 7, lines 26-31; page 9, lines 16-23). Moreover, the description and the examples do not contain any disclosure that may suggest that, during drying of the applied paint, additional or different solids would be formed and that the composition of the highly porous inorganic substance would be modified.

Therefore, following the disclosure of the application as filed, the amount of TiO₂ nanoparticles in the solids contained in the multifunctional paint and in the paint coat must be identical.

This conclusion applies also if the chemical composition of the paint (and thus of the paint coat) cannot be exactly defined, as repeatedly stated in the description (see for example page 5, lines 22-23 and page 9, lines 19-20) since, as explained above, the only solids in the paint and in the paint coat are the TiO₂ nanoparticles and the highly porous inorganic substance.

Therefore also feature (c) of claim 1 is directly and unambiguously disclosed in combination with the other features of the claim.

1.2.6 The respondent contested this conclusion with new arguments and calculations submitted with its reply to the board's preliminary opinion. In particular, it submitted that zinc carbonate, possibly present in the paint, would liberate carbon dioxide over time with formation of zinc oxide and that calcium oxide or calcium hydroxide (if present in the paint) would scavenge carbon dioxide from the ambient air to form calcium carbonate, such further reactions taking place during drying of the paint. Therefore the solids content of the paint and of the paint coat could be different.

In the board's view, even accepting for the sake of argument that the above reactions might occur during drying of the paint under specific circumstances, they represent a further theoretical embodiment not disclosed in the application as filed, which instead, as exposed above, only discloses that during drying of the paint the composition of the highly porous inorganic substance supporting the TiO_2 nanoparticles is not modified, so that there is no reason to doubt that the solids content of the paint and of the paint coat do not remain identical.

As these late submissions of the respondent are not apt to jeopardize the conclusion that feature (c) has a basis in the application as filed, their admittance into the procedure does not need to be discussed.

1.3 It follows from the above considerations that the subject-matter of claim 1 as granted is directly and unambiguously derivable from the application as filed and therefore complies with the requirements of Article 123(2) EPC.

- 1.4 As exposed in the board's provisional opinion, also claims 2 to 10 as granted fulfil the requirements of Article 123(2) EPC. In particular, taking into account the disclosure referred to above and the conclusion with respect to claim 1, the disclosures in the application as filed relating to the paint apply analogously to the paint coat as indicated hereinafter.
- 1.4.1 The additional features of **claim 2**, that the insoluble calcium compound as first component is selected from the group of nano-calcium carbonate, lime, calcium hydroxide and mixtures thereof, are disclosed on page 3, lines 14-16 and page 5, lines 11-14.
- 1.4.2 The additional features of **claim 3**, that the weight ratio of the second component (sulfate) to the first component (insoluble calcium compound) is from 0.1:1 to 10:1, are disclosed on page 3, lines 23-24.
- 1.4.3 The additional features of **claims 4 to 7**, that
- a water suspension of the first component is deposited on the treated area and subsequently the TiO₂ nanoparticles suspended in a water solution of the second component is applied on the top of the first layer, or
 - in one step, the reacting mixture of the first component, the second component and TiO₂ nanoparticles in water are altogether deposited on the treated surface, or
 - in two steps, the water suspension of the first component and TiO₂ nanoparticles is deposited on the treated area and subsequently the water solution of the second component is applied over the first layer, or
 - on surfaces rich in insoluble calcium compounds, namely stucco and concrete, the TiO₂ nanoparticles suspended in the water solution of the second component

are applied on the treated surfaces, are disclosed in the passage from page 3, line 28 to page 4, line 14.

1.4.4 The additional features of **claim 8**, that the paint coat is manufactured and applied at the temperature from 10 to 50°C, is supported by the passage on page 4, lines 16-17.

1.4.5 A method of cleaning the surfaces covered with the multifunctional paint coat prepared according to **claim 9**, with the cleaning of the paint coat and refreshing of its functionality being realised by occasional illuminating of the painted area with an intensive UV light source, is disclosed on page 4, lines 24-26.

1.4.6 A method of odor removal in the rooms with insufficient ventilation according to **claim 10**, with the prepared multifunctional paint coat being applied on the room ceiling, forced air turbulence being created at the ceiling and the painted area being illuminated with UV light, is disclosed on page 4, lines 19-23.

1.5 It follows from the above considerations that the board sees no reason to follow the contested decision and concludes that the description taken as a whole directly and unambiguously discloses the subject-matter of claims 1 to 10 as granted, which thus comply with the requirements of Article 123(2) EPC.

2. *Remittal (Article 111(1) EPC and Article 11 RPBA 2020)*

2.1 As the decision under appeal does not deal with the other grounds of opposition, and these being also not discussed in detail in the parties' written submissions in appeal, the board finds it appropriate, under the provisions of Article 111(1) EPC, to remit the case to

the opposition division for further prosecution, in order to allow a discussion of the other grounds of opposition.

2.1.1 It follows that the admissibility of E11 and E12, filed with proprietor's letter of 11 February 2019, and of E13, cited in the respondent's discussion about the admissibility of E11 and E12 (see letter of 17 January 2020), needs not to be discussed in the appeal proceedings.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division for further prosecution.

The Registrar:

The Chairman:



A. Pinna

J.-M. Schwaller

Decision electronically authenticated