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Datasheet for the decision of 9 February 2015

Case Number: T 0414/13 - 3.3.01

Application Number: 07251482.1

Publication Number: 1842881

IPC: C09D5/08, C09D201/00

Language of the proceedings: EN

Title of invention:
Chromate free waterborne corrosion resistant primer

Patent Proprietor:
United Technologies Corporation

Opponent:
BASF Coatings GmbH

Headword:
corrosion inhibiting additive/UTC

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
Novelty - (yes)
Inventive step - obvious solution

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Decisions cited:

Catchword:

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Case Number: T 0414/13 - 3.3.01

D E C I S I O N
of Technical Board of Appeal 3.3.01
of 9 February 2015

Appellant: (Patent Proprietor)	United Technologies Corporation United Technologies Building, 1 Financial Plaza Hartford, CT 06101 (US)
Representative:	Hoffmann, Benjamin Dehns St. Bride's House 10 Salisbury Square London EC4Y 8JD (GB)
Respondent: (Opponent)	BASF Coatings GmbH Glasuritstrasse 1 48165 Münster (DE)
Representative:	Steffan, Gerhard Leifert & Steffan Patentanwälte Burgplatz 21-22 40213 Düsseldorf (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 29 November 2012 revoking European patent No. 1842881 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	A. Lindner
Members:	G. Seufert
	D. Rogers

Summary of Facts and Submissions

I. The patent proprietor (appellant) lodged an appeal against the decision of the opposition division revoking European patent No. 1 842 881.

II. The present decision refers to the following documents:

(5a) EP 1 493 846 A
(6) Ullmann's Encyclopedia of Industrial Chemistry, 5th edition, 1991, VHC Verlagsgesellschaft, Weinheim (DE), Vol. A 18, pages 434 to 438
(8) US 6,758,887
(9) O. Schneider *et al.*, Z. Anorg. Allg. Chem., 625, 1999, pages 1101 to 1106
(10) A. A. Shvartsburg, J. Am. Chem. Soc., Vol. 124, No. 27, 2002, pages 7910 to 7911
(11) Experimental Data submitted by the appellant with the statement of grounds of appeal

III. Notice of opposition was filed requesting revocation of the patent in suit in its entirety on the grounds of lack of novelty and lack of inventive step, insufficiency of disclosure and added matter (Article 100 a), b) and c) EPC).

IV. The opposition division held that the main request and auxiliary requests 1 to 4 complied with Articles 123(2) and 83 EPC. The subject-matter of the main request and auxiliary request 1 was considered to be anticipated by document (5a). The subject-matter of auxiliary requests 2 to 4 was held to be obvious in the light of document (8), which was considered to be the closest state of the art, and document (5a).

V. With the statement of grounds of appeal, dated 26 March 2013, the appellant resubmitted the main request and auxiliary requests 1 to 3 underlying the decision under appeal. In addition, document (11) was filed.

The main request consists of 17 claims with claim 1 reading as follows:

"1. A waterborne corrosion resistant primer composition, comprising:

a waterborne resin system;
an optional curing agent; and
a non-chromate containing corrosion inhibiting additive, wherein the non-chromate corrosion inhibiting additive comprises

an anodic corrosion inhibitor selected from the group consisting of transition metal salts,

a cathodic corrosion inhibitor selected from the group consisting of rare earth metal compounds, and

a metal complexing agent selected from the group consisting of citrate, gluconate, polyphosphate, tartrate, β-diketonates, α-hydroxy acids, D-fructose, L-sorbose and mixtures thereof

wherein the metal complexing agent increases the solubility of at least one of the anodic and cathodic corrosion inhibitors and the metal complexing agent is present in an amount of between 0.1 to 1.0 with respect to the mole fraction of the combined anodic and cathodic corrosion inhibitor."

Auxiliary request 1 differs from the main request in that the feature of claim 11 has been introduced into claim 1, limiting the amount of the metal complexing agent to **0.3 to 0.7**.

Auxiliary request 2 differs form the main request in that the curing agent has been made a mandatory component **selected from the group consisting of waterborne or water-reducible modified amine or polyamidoamine adducts having amine value between 300-450.**

Auxiliary request 3 differs from auxiliary request 2 in that the amount of the metal complexing agent has been limited to **0.3 to 0.7.**

VI. In a communication accompanying the summons to oral proceedings, the board expressed its preliminary opinion and indicated the issues for discussion.

VII. The arguments of the appellant with regard to the decisive issues can be summarised as follows:

- Admission of document (11)

Document (11) was filed in response to document (8), which was not submitted with the notice of opposition, but shortly before the date for making submissions set by the opposition division expired. It was timely filed with the statement of grounds of appeal and was intended to support improvements in corrosion resistance.

- Novelty

Neither claims 14 and 15 nor the description of document (5a) clearly and unambiguously described a waterborne primer composition with a waterborne resin. The term "waterborne" had a special meaning, which went beyond a mere combination of organic binder, water and pigment being present at the same time. Claim 15 of document

(5a) did not specify the binder to be of the type required to provide a waterborne primer. Claim 14 did not specify the amount of water nor required that the overall composition used water as the predominant solvent. The same was true for the description of document (5a).

- Inventive step

Document (8) was the closest prior art. The problem to be solved in the light of said document was the provision of a waterborne corrosion resistant primer composition with improved resistance against general and pitting corrosion. Document (11) was filed to demonstrate that this effect was achieved. The combination with document (5a) was based on hindsight taking into account that this document was not concerned with waterborne primer compositions. The skilled person had no expectation that the use of the specific metal complexing agents disclosed in document (5a) would lead to an improvement in corrosion resistance in a water-borne primer. It was also uncertain whether the components of document (8) and (5a) were compatible.

VIII. The arguments of the respondent with regard to the decisive issues can be summarised as follows:

- Admission of document (11)

Document (11) was late-filed without any justification. It was *prima facie* not relevant, because it did not meet the standard required for adequate comparative tests.

- Novelty

The subject-matter of claim 1 of the main request and auxiliary request 1 was anticipated by document (5a). The features "waterborne primer" and "waterborne resin" were disclosed in claim 14, which exemplified an aqueous system, and claim 15, which was directed to an organic binder. The use of organic binder which were suitable for aqueous systems would be clear to any skilled person. The disclosure of aqueous systems was also apparent from the description, in particular paragraphs [0015] or [0025].

- Inventive step

The subject-matter of claim 1 of the main request was not inventive in the light of document (8) in combination with document (5a). If the diacetone alcohol in the examples of document (8) was not taken into account, the only missing feature was the metal complexing agent. The problem to be solved was an improvement in the solubility of the corrosion inhibitors and therefore in the performance of the primer composition. The proposed solution was obvious from document (5a), which taught the use of metal complexing agents for exactly that purpose. There was no reason for the skilled person to expect any compatibility problems.

The features of auxiliary requests 1 to 4 were known from documents (5a) or (8) and could not support an inventive step for the same reasons as provided for the main request.

IX. The appellant requested that the decision under appeal be set aside and that the patent be maintained upon the

basis of the claims of the main request, or alternatively upon the basis of the claims of one of auxiliary requests 1 to 3, all requests filed under cover of a letter dated 26 March 2013. In addition the appellant requested that document (11) be admitted into the proceedings.

X. The respondent requested that the appeal be dismissed and that document (11) not be admitted into the proceedings.

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

Reasons for the Decision

1. The appeal is admissible.

2. Admission of document (11)

2.1 Document (11) was filed with the statement of grounds of appeal, in direct response to the opposition division's decision revoking the patent. The appellant challenged the opposition division's findings of lack of inventive step starting from document (8) as the closest prior art and in support submitted document (11) in an attempt to demonstrate unexpected technical advantages.

2.2 The respondent objected to the admission of document (11) arguing that it could have been filed during the first instance proceedings and that it was not *prima facie* relevant.

2.3 The board notes that document (8) had not been filed with the notice of opposition, but was submitted by the

respondent after the opposition division had issued the summons to oral proceedings accompanied by its preliminary opinion and three days before the date for making written submissions set by the opposition division expired. At the oral proceedings inventive step of auxiliary requests 2 to 4 (the main and first auxiliary request were found not to be novel) was discussed based on the newly introduced document (8) as the closest prior art. The appellant's arguments with respect to improved corrosion resistance of the claimed subject-matter over document (8) did not convince the opposition division and the patent was revoked. In these circumstances, the board is of the opinion that the submission of document (11), filed with the statement of grounds of appeal and therefore at the earliest possible moment, is an appropriate and legitimate attempt by the appellant to further support its position with respect to inventive step. As an attempt to demonstrate unexpected advantages over document (8), it was *prima facie* relevant for the question of inventive step. Whether or not it provided conclusive evidence was an issue to be considered in the assessment of inventive step.

2.4 Hence, the board decided to admit document (11) into the proceedings.

Main request

3. Novelty

3.1 According to the decision under appeal, claim 1 lacks novelty over document (5a). This decision was challenged by the appellant.

3.2 It is uncontested that document (5a) discloses a corrosion inhibiting composition comprising an organic binder as carrier and a non-chromate corrosion inhibiting additive, wherein the additive comprises anodic and cathodic corrosion inhibitors and metal complexing agents as presently claimed (claims 11 and 15; paragraphs [0019] to [0024]). It is equally uncontested that there is no explicit reference in document (5a) to a "waterborne primer" or a "waterborne resin system".

According to the decision under appeal, these features were implicitly disclosed in view of claims 14 and 15 of document (5a).

3.3 The board does not agree. Firstly, it is apparent from document (6) that the term "waterborne resin", which requires particular characteristics, has a more specific meaning than the term "organic binder" mentioned in claim 15. Furthermore, the reference to a pH-value in claim 14 indicates the presence of water. However, it does not inevitably restrict the organic binder to a waterborne resin, nor does it make the water and organic binder comprising composition inevitably a water-thinnable or water-reducible system. It is equally conceivable for the organic binder to be a solvent-borne binder and the organic binder comprising composition to be a solvent-thinnable or solvent-reducible system with a certain amount of water being present.

3.4 The same disclosure as in the claims is reflected in the description of document (5a). It is true that the solubility of the metal complexing agent in water is mentioned in the description (paragraph [0015]), which indicates that the corrosion inhibiting additive can be used in aqueous systems. However, this does not lead

directly and unambiguously to a waterborne primer with a waterborne resin, in particular because the description also makes a distinction in paragraph [0024] between aqueous systems with water as a carrier, such as conversion coatings, and those with an organic carrier, such as adhesives, paints, primers, etc.
Paragraph [0025] of the description, which refers to such organic carriers also mentions the solubility of the corrosion inhibitors in water. This indicates that water can be present. However, as explained in point 3.3 above, its does not clearly and unambiguously disclose a waterborne primer with a waterborne resin system.

3.5 For the above reasons, the board concludes that the features "waterborne primer" and "waterborne resin system" are not directly and unambiguously disclosed in document (5a). Accordingly, the subject-matter of claim 1 of the main request is novel.

4. Inventive step

4.1 Claim 1 of the main request refers to a waterborne corrosion resistant primer composition, comprising a waterborne resin system and a corrosion inhibiting additive comprising a specific anodic and cathodic corrosion inhibitor and a metal complexing agent selected from the group consisting of citrate, gluconate, polyphosphate, tartrate, β-diketonates, α-hydroxy acids, D-fructose, L-sorbose and mixtures thereof in a particular amount (see point V above).

4.2 In the decision under appeal, document (8) was considered to be the closest state of the art. This document is directed to waterborne corrosion resistant primer compositions, effective against pitting and general corrosion, comprising a waterborne epoxy, a

curing agent and a non-chromate corrosion inhibiting pigment comprising anodic and cathodic corrosion inhibitors as presently claimed (see claim 1; column 1, lines 39 to 41)). The board sees no compelling reason to depart from the opposition division's choice and takes document (8), in accordance with both parties, as a suitable starting point for the assessment of inventive step.

4.3 However, contrary to the opposition division, the board notes that document (8) does not disclose the presence of a metal complexing agent. In the examples of document (8) diacetone alcohol (4-hydroxy-4-methyl-2-pentanone) is mentioned as a component, but the purpose of its presence is not explained anywhere in document (8). Nor is it mentioned as an essential feature of the invention in any of the claims. It may be true that diacetone alcohol can form metal complexes under specific conditions as disclosed in documents (9) or (10). It is however, also known to act as a solvent or a solubiliser for resins in paints or lacquers. In the absence of any information as to its purpose, the opposition division's conclusion that the skilled person identifies diacetone alcohol as a complexing agent goes beyond what the skilled person would have objectively inferred from the prior art, without the benefit of hindsight knowledge of the invention.

4.4 In the light of document (8), the appellant formulated the problem to be solved as the provision of waterborne primer compositions with improved resistance against general and pitting corrosion. The board concurs with this definition of the problem to be solved. The proposed solution was the addition of particular metal complexing agents in specific amounts. Document (11) was filed in support of the asserted improvements.

4.5 Although document (11), which does not contain a valid comparison between the claimed invention and the closest prior art, cannot be relied on as evidence for any improvement over document (8), the board is satisfied that the problem as defined in point 4.4. above is plausibly solved. According to the patent in suit, the addition of the metal complexing agents increases the solubility of the corrosion inhibitor (see column 3, lines 6 to 8 and claim 1 of the patent in suit). In the board's opinion, an increase in solubility makes a better distribution of the corrosion inhibitor possible, which in turn renders improvements in corrosion inhibiting performance plausible.

4.6 It remains to be decided whether or not the proposed solution is obvious in view of the prior art.

When starting from the compositions of document (8), it is a matter of course that the skilled person would turn its attention to prior art which belongs to the same technical field and is concerned with the same problem. He would be aware of document (5a), which is directed to a corrosion inhibiting additive, effective against general and pitting corrosion, comprising the same type of anodic and cathodic corrosion inhibitors as document (8) (see document (5a), paragraph [0020] and [0021]) and a metal complexing agent. This additive can be used in adhesives, paints, primers etc. (see paragraph [0024] or [0025]). The metal complexing agent is added to increase the solubility of the corrosion inhibitors thereby enhancing their performance (see paragraphs [0006] and [0014] and claim 1). Particularly useful complexing agents according to document (5a) are those presently claimed (see paragraph [0022]).

Document (5a), therefore, provides the skilled person with a clear incentive to add the presently claimed metal complexing agents to the corrosion inhibiting pigment of document (8) with a reasonable expectation of improving the corrosion resistance of the primer compositions disclosed therein.

4.7 According to the appellant, the combination of document (8) with document (5a) was based on hindsight. Document (5a) merely taught the use of a metal complexing agent to increase the solubility of the corrosion inhibiting additive (see paragraph [0014]). It was entirely unexpected that the use of the specific metal complexes disclosed in document (5a) would have led to an improvement in corrosion resistance compared to those of document (8), which, as noted by the opposition division, already contained a metal complexing agent.

4.8 As set out in point 4.3 above, the board does not share the opposition division's conclusion that the skilled person, without hindsight knowledge of the invention, identifies the diacetone alcohol mentioned in the examples of document (8) as a metal complexing agent. The question to be answered is therefore not whether the substitution of diacetone alcohol by the presently claimed metal complexing agents leads to an unexpected improvement of corrosion resistance, but whether or not the skilled person would have added the presently claimed metal complexes to the corrosion resistant primer compositions of document (8) in expectation of improving their corrosion resistance. As set out in point 4.6 above, the board is convinced that document (5a) provides a clear motivation to do so.

4.9 The appellant also argued that there was no *prima facie* certainty that all components of the presently claimed primer composition would be compatible with each other. Unwanted interactions could not be excluded. Therefore, the skilled person would not have considered applying the teaching of document (5a), which is not concerned with waterborne resins systems, to the waterborne primer composition of document (8).

4.10 However, the appellant has not provided any evidence in support of its allegation as to an expected lack of compatibility with waterborne resins. Furthermore, according to document (5a) the corrosion resistant additive, i.e. the anodic and cathodic corrosion inhibitor and the metal complexing agent, can be used with an organic binder as carrier as well as in aqueous systems (see paragraph [0024]). No restrictions with respect to the organic binders are taught in document (5a), and the board sees no convincing reason - and none has been provided - for the conclusion that the skilled person would have been deterred from using the metal complexing agent of document (5a) for the same type of corrosion inhibitors in the primer compositions of document (8) comprising a waterborne epoxy resin as organic binder. In the absence of any evidence, the appellant's argument that the skilled person, due to some purported uncertainty as to the compatibility of the individual components, would not have followed the clear teaching of document (5a), is mere speculation and therefore cannot succeed.

4.11 For the above reasons, the board concludes that the subject-matter of claim 1 of the main request does not involve an inventive step within the meaning of Article 56 EPC. The main request must therefore be refused.

Auxiliary requests 1, 2 and 3

5. Inventive step

5.1 Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that the amount of metal complexing agent is limited to 0.3 to 0.7 with respect to the mole fraction of the combined anodic and cathodic corrosion inhibitor. However, document (5a) already discloses this feature as a preferred embodiment (see page 3, lines 52 to 53).

Claim 1 of auxiliary request 2 differs from claim 1 of the main request in that a specific curing agent is present. However, the presence of this curing agent is already disclosed as a preferred feature in document (8) (see claim 7).

Claim 1 of auxiliary request 3 differs from the second auxiliary request in that the specific amount of claim 1 of auxiliary request 1 has been added.

5.2 Since neither the particular amount of metal complexing agent, nor the presence of the particular curing agent, nor the combination of both has been shown to result in any additional technical benefits vis-à-vis the closest prior art, the same considerations and conclusion as for the main request still apply, with the consequence that the auxiliary requests 1 to 3 must also be refused for lack of inventive step (Article 56 EPC).

5.3 The appellant did not provide any additional arguments for auxiliary requests 1 and 3. Concerning auxiliary request 2, the appellant referred again to the alleged uncertainty with respect to the compatibility of all

components, in particular the compatibility between the curing agent and the metal complexing agent, which may lead to adverse reactions.

5.4 However, as explained in point 4.10 above, the appellant's argument is mere speculation. In the absence of any evidence that such compatibility problems are to be expected, there is nothing from which the board can reasonably conclude that the skilled person would have been deterred from applying the teaching of document (5a) to the primer compositions of document (8).

Order

For these reasons it is decided that:

1. The appeal is dismissed.

The Registrar: The Chairman:

M. Schalow A. Lindner

Decision electronically authenticated