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Datasheet for the decision of 10 January 2012

Case Number: T 0971/08 - 3.2.07

Application Number: 00983893.9

Publication Number: 1240363

IPC: C23C 22/83, C23C 22/34, C23C 22/68

Language of the proceedings: EN

Title of invention:
Coated metal substrates and methods for preparing and inhibiting corrosion of the same

Patentee:
PPG Industries Ohio, Inc.

Opponent:
BASF Coatings GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 56, 87, 88, 123(2)

Keyword:
"Entitlement to priority (main request - no disclosure in this individulized form)"
"Inventive step (main request - no)"
"Admissibility of new auxiliary requests (not disclosed in individualized form)"

Decisions cited:
G 0010/91, G 0002/98, G 0002/10

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0971/08 - 3.2.07

D E C I S I O N
of the Technical Board of Appeal 3.2.07
of 10 January 2012

Appellant: (Opponent)
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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 20 March 2008 concerning maintenance of European patent No. 1240363 in amended form.

Composition of the Board:

Chairman: H. Meinders
Members: H. Hahn
I. Beckedorf

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the decision of the Opposition Division to maintain the European patent EP-B-1 240 363 in amended form on the basis of claims 1-41 of the first auxiliary request filed at the oral proceedings of 18 February 2008.

II. Independent claims 1, 38, 40 and 41 as maintained by the Opposition Division read as follows (amendments in claims 40 and 41 as compared to these claims of the patent as granted are in bold with deletions in brackets; emphasis added by the Board):

"1. A coated unphosphated metal substrate comprising:
(a) an unphosphated metal substrate;
(b) a first pretreatment composition deposited upon at least a portion of the substrate, the first pretreatment composition comprising a transition element-containing material which comprises a transition element selected from the group consisting of Group IIIB elements, Group lVB elements, lanthanide series elements and mixtures thereof;
(c) a second pretreatment composition comprising a reaction product of at least one epoxy-functional material or derivative thereof and at least one material selected from the group consisting of phosphorus-containing materials, amine-containing materials, sulfur-containing materials and mixtures thereof deposited upon at least a portion of the first pretreatment composition; and
(d) a lead-free electrodepositable coating composition deposited upon the second pretreatment composition."

"38. A method for preparing a coated unphosphated metal substrate, comprising the steps of:
(a) treating a surface of a unphosphated metal substrate with a first pretreatment composition comprising a transition element-containing material which comprises a transition element selected from the group consisting of Group IIIB elements, Group IVB elements, lanthanide series elements and mixtures thereof; and
(b) applying a second pretreatment composition comprising a reaction product of at least one epoxy functional material or derivative thereof and at least one material selected from the group consisting of phosphorus-containing materials, amine-containing materials, sulfur-containing materials and mixtures thereof over at least a portion of the first pretreatment composition to form a substrate having a pretreated surface, and
(c) applying a lead-free electrodepositable coating composition deposited over the second pretreatment composition."

"40. A coated unphosphated metal substrate comprising:
(a) an unphosphated metal substrate;
(b) a pretreatment composition deposited upon at least a portion of the substrate, the pretreatment composition comprising
(1) a transition element containing material which comprises a transition element selected from the group consisting of Group lIlB elements, Group IVB elements, lanthanide series elements and mixtures thereof:
(2) a reaction product of at least one epoxy-functional material or derivative thereof and at least one material selected from the group consisting of

phosphorus-containing materials **and mixtures thereof with [,]** amine-containing materials **and [,]** sulfur-containing materials **[and mixtures thereof]**; and
(c) a lead-free electrodepositable coating composition deposited upon the pretreatment composition."

"41. A method for preparing a coated unphosphated metal substrate, comprising the
(a) step of treating a surface of an unphosphated metal substrate with a pretreatment composition comprising
(1) a transition element-containing material which comprises a transition element selected from the group consisting of Group IIIB elements, Group IVB elements, lanthanide series elements and mixtures thereof:
and
(2) a reaction product of at least one epoxy functional material or derivative thereof and at least one material selected from the group consisting of phosphorus-containing materials **and mixtures thereof with [,]** amine-containing materials **and [,]** sulfur-containing materials **[and mixtures thereof]** to form a substrate having a pretreated surface; and
(b) the step of applying a lead-free electrodepositable coating composition to the pretreated surface."

III. The following documents are cited in the present decision:

Of the opposition proceedings:
D1 = WO-A-00 32351
D2 = US-A-5 855 695
D3 = US-A-5 820 987
D4 = US-A-5 760 107

D5 = US 09/469 259 (priority document of the patent in suit)
D6 = US-B1-6 168 868
D8 = US-A-4 457 790
D10 = WO-A-00 68459
D11 = WO-A-00 68325
D12 = WO-A-00 68466

Filed in the appeal proceedings:
D17 = Material Safety Data Sheet, PPG Industries, Inc., Product ID: ED6650, prepared on 05/03/01
D18 = Material Safety Data Sheet, PPG Industries, Inc., Product ID: E6127, issue date 01/28/2005

IV. The opposition had been filed against the patent in its entirety under Article 100(a) EPC, for lack of novelty and inventive step.

The Opposition Division accepted the late filed documents D6-D12 into the proceedings for being *prima facie* relevant (the priority document D5 underlying the patent in suit was likewise introduced). It held that the priority was validly claimed with respect to claims 1-39 but not for claims 40 to 41 of the patent as granted. The Opposition Division considered that the subject-matter of claims 1-41 of the main request was novel with respect to D1 but that the subject-matter of claims 40 and 41 lacked novelty over D10. Amended claims 40 and 41 of the first auxiliary request filed at the oral proceedings of 18 February 2008 were considered to meet the requirements of Articles 123(2) and (3) EPC and of Article 54 EPC. Furthermore, the subject-matter of the contested claims of this auxiliary request was considered inventive over any

combination of D2 or D8 with D3 or D4. As a result the patent in suit was maintained in amended form according to this request.

V. With a communication dated 9 September 2011 and annexed to the summons to oral proceedings the Board presented its preliminary opinion with respect to the claims 1-41 as maintained by the Opposition Division.

The Board remarked that it would be first discussed whether or not the priority of the patent in suit is valid and raised the question whether the priority can be validly claimed from D5 since the electrodepositable coating appeared to be disclosed in D5 only as dependent on the **prior** application of a weldable, i.e. electroconductive, coating on the (second) pretreatment composition.

In the context of priority the Board remarked that it appeared that at least the subject-matter as claimed in claims 40 and 41 of the patent as maintained needed a number of selections out of its priority D5 to arrive at the present wording.

With respect to the issue of inventive step the Board remarked amongst others that in case that the priority is not considered to be valid then the question would be, which objective technical problem the person skilled in the art when starting from D1 - which in such a case could represent the closest prior art - has to solve, in order to arrive at the subject-matter claimed and whether or not this would be obvious taking account of the problem-solution approach, particularly in the light of his common general knowledge.

VI. With letter dated 5 December 2011 the respondent maintained its request to dismiss the appeal and thus to maintain the patent as maintained by the Opposition Division. Alternatively it requested to maintain the patent on the basis of one of the first to third auxiliary requests as submitted with this letter which were supported by arguments concerning the allowability of the amendments made therein. Furthermore, the documents D17 and D18 were submitted in order to support its arguments concerning the validity of the priority, novelty and inventive step.

VII. With letter dated 12 December 2011 the appellant taking account of the Board's comments in the annex to the summons submitted further arguments with respect to the validity of the priority, lack of novelty and lack of inventive step. Additionally, a new objection under Article 100(c) EPC was raised.

With letter dated 21 December 2011 the respondent responded thereto and requested not to admit the ground of opposition pursuant to Article 100(c) EPC in accordance with decision G 10/91 (OJ EPO 1993, 420).

VIII. Oral proceedings before the Board were held on 10 January 2012. To start, the validity of the claimed priority of the patent was discussed on the basis of the disclosure of D5. Thereafter inventive step of the subject-matter of claim 1 of the main request was discussed in view of D1, D10, D3 and D4. As a consequence of this discussion of the main request the respondent filed amended versions of the first and second auxiliary requests which replaced all auxiliary

requests filed earlier in the appeal proceedings. Then the issue of admissibility of these auxiliary requests was discussed.

(a) The appellant requested that the decision under appeal be set aside and that the patent be revoked.

(b) The respondent requested that the appeal be dismissed, or, alternatively that in setting aside the decision under appeal the patent be maintained in amended form on the basis of one of the sets of claims filed as first and second auxiliary requests during the oral proceedings.

At the end of the oral proceedings the Board announced its decision.

IX. The first auxiliary request filed at the oral proceedings before the Board has been restricted to claims 1-34 (claims 29-35 of the main request were deleted) with its independent claims 33 and 34 being identical with claims 40 and 41 of the main request while its amended independent claims 1 and 31 read as follows (amendments in claims 1 and 31 as compared to the claims 1 and 38 of the main request are in strikethrough; emphasis added by the Board):

"1. A coated unphosphated metal substrate comprising:
(a) an unphosphated metal substrate;
(b) a first pretreatment composition deposited upon at least a portion of the substrate, the first pretreatment composition comprising a transition element-containing material which comprises a transition element selected from the group consisting

of Group IIIB elements, Group lVB elements, lanthanide series elements and mixtures thereof;
(c) a second pretreatment composition comprising a reaction product of at least one epoxy-functional material or derivative thereof and at least one material selected from the group consisting of phosphorus-containing materials~~, amine-containing materials, sulfur-containing materials and mixtures thereof~~ deposited upon at least a portion of the first pretreatment composition; and
(d) a lead-free electrodepositable coating composition deposited upon the second pretreatment composition."

"31. A method for preparing a coated unphosphated metal substrate, comprising the steps of:
(a) treating a surface of a unphosphated metal substrate with a first pretreatment composition comprising a transition element-containing material which comprises a transition element selected from the group consisting of Group IIIB elements, Group IVB elements, lanthanide series elements and mixtures thereof; and
(b) applying a second pretreatment composition comprising a reaction product of at least one epoxy functional material or derivative thereof and at least one material selected from the group consisting of phosphorus-containing materials~~, amine-containing materials, sulfur-containing materials and mixtures thereof~~ over at least a portion of the first pretreatment composition to form a substrate having a pretreated surface, and
(c) applying a lead-free electrodepositable coating composition deposited over the second pretreatment composition."

X. Claims 1-32 of the second auxiliary request as filed at the oral proceedings before the Board are identical with those of the first auxiliary request.

XI. The appellant argued, insofar as relevant for the present decision, essentially as follows:

The feature "unphosphated metal substrate" comprised in the independent claims of the patent as granted is not clearly and unambiguously derivable from the priority document D5 as required by G 2/98 (OJ EPO 2001, 413), let alone from its claims 1-43 which are silent in this respect. It can also not be derived from a generalisation of the examples which were only made with the specific pretreatment compositions A and B only containing Zr-ions (see page 34, lines 5 to 10 in combination with pages 29 and 30). To the contrary, D5 discloses an optional phosphating treatment (see page 7, lines 7 to 16). The person skilled in the art considers the entire disclosure of D5 and not only its examples (see page 34) so that said feature was not evidently comprised in the technical teaching.

Likewise the feature "lead-free electrodepositable coating composition" comprised in the independent claims of the patent as granted has no basis in this general form in D5. The only passage of D5 dealing with electrodepositable coatings states that the weldable electroconductive coatings are overcoated (see D5, page 27, lines 8 to 16; and claim 35). The Board's conclusions in point 3.1 of its annex to the summons, that the teaching of D5 appears to be that a weldable coating composition has to be applied after the second

pretreatment composition and before the electrodepositable coating, are correct. This conclusion is not in contradiction with the statement in D5 dealing with the background of the invention that a pretreatment process, when combined with a lead-free electrodeposition process, would provide an environmentally friendly alternative (see D5, page 2, lines 22 to 27). This general statement of the background cannot be taken out of its context and overrule the different concrete technical teachings in D5. The same conclusion is valid with respect to the statement on page 34, lines 11 to 16 which can only be seen in the context of the results of the pretreatment solutions A and B according to the examples.

The passage on page 27, lines 8 to 16 is entirely contained within a discussion of the application of a weldable coating, thus, the electrodeposited composition is directly linked to such a prior coating. Furthermore, this passage on page 27 merely states that such electrodeposition compositions are well known to those skilled in the art and "a detailed discussion thereof is not believed to be necessary" and only distinguishes between anionic and cationic electrodeposition, so does not directly point at a lead-free electrodepositable composition. Indeed, among the three US patents cited with respect to cationic electrodeposition are D3 and D4, which disclose lead-free or lead-reduced compositions, and the third patent (as well as the fourth, relating to anionic electrodeposition) relates to exclusively lead-containing compositions. Thus it is not so directly and unambiguously derivable that the invention is meant to involve a "lead-free electrodepositable composition",

also because this feature, which is to be "incorporated by reference" into the original teaching of D5 can just as well be a lead-containing composition. In any case, none of the claims of D5 comprises said feature "lead-free coating composition", therefore it cannot have been an essential feature of the invention. In the first instance proceedings the respondent argued with respect to novelty that D1 cannot be novelty destroying since it does not clearly and unambiguously disclose the feature of said "lead-free electrodepositable coating composition". However, the "incorporated by reference" passage used in D1 (page 19, lines 14 to 22) is identical with that in D5; according to the longstanding practice of the EPO the same criteria have to be applied for establishing novelty, the validity of the priority and whether or not the requirements of Article 123(2) EPC are fulfilled. The respondent cannot have the benefit of an original disclosure of this feature in D5 and at the same time have it excluded from the original disclosure of D1.

The combination of these two features, particularly with the other features of the independent claims of the patent as granted, has no basis in D5 either.

The respondent argues selectively with respect to desired (i.e. the transition elements of groups IIIB, IVB and lanthanide series comprised in the (first) pretreatment compositions of the independent claims of the patent as granted) and non-desired heavy metals such as Ni and Cr mentioned on page 2 of D5. However, also the weldable coating composition may comprise heavy metals such as Ni or W (see D5, page 23, lines 3

to 5). It is therefore not evident that the last coating, according to the invention, is lead-free.

The late filed post-published documents D17 and D18 were received by the appellant only on 23 December 2011 and it was not possible to verify or check whether ED6650 - which was used according to the examples of the patent in suit (see D5, page 31, lines 12 and 13) - has always been a lead-free composition. In any case this allegation is disputed. The accompanying persons cannot make any statements in this respect. Hence there does not exist any conclusive preference in D5 for lead-free compositions.

Consequently, the patent in suit cannot validly claim the priority from D5 so that 4 December 2000 is the relevant date for the patent in suit, making D1 state of the art under Article 54(2) EPC.

With respect to inventive step the subject-matter of claim 1 is rendered obvious by the teaching of D1 alone.

D1 discloses epoxy-functional phosphorous-containing and/or amine-containing material (see page 5, lines 6 to 9) comprised in a pretreatment solution in combination with one or more group IVB element-containing materials, but the latter can also be applied in a separate step, i.e. a 2-step pretreatment (see page 12, lines 10 to 24). It suggests the further application of the same electrodepositable coating compositions as the patent in suit since the same four US patents are referred to in a passage (see page 19, lines 14 to 22) identical to the one discussed above for D5 and as present in the patent in suit, paragraph

[0085], so that the person skilled in the art will select the lead-free compositions when environmental sustainability requires the same. The examples (see e.g. example 2) were made on unphosphated metal substrates (see pages 20 to 24), therefore such substrates are apparently preferred. It is remarked that the two pretreatment steps according to the patent in suit need not be different but can use identical compositions (see patent, paragraph [0020]) and the second step composition may also comprise a transition element (see patent, paragraph [0062]). It is not apparent why a double treatment with identical solutions should involve inventive step since no advantages can be seen.

The respondent argues that present claim 1 excludes a weldable coating composition layer and that this constitutes to inventive step but claim 1 of the main request does not exclude such an intermediate weldable composition layer (see patent, e.g. dependent claims 29 to 35).

D4 likewise suggests treating the metal substrate in unphosphated form (see column 1, lines 48 to 50 and column 2, lines 1 to 5).

The new auxiliary requests should not be admitted for being late filed. The appeal proceedings serve to review the first instance decision but not examine a fresh case, as is now produced by these requests. The appellant is taken by surprise and it may be necessary to carry out a further search or to check all documents whether or not they are relevant for amended claim 1. Furthermore, by deleting the other possibilities from the list of materials of the second pretreatment

composition yet another "singling out" takes place, this time contrary to Article 123(2) EPC. It is also not apparent which effect would result from the restriction to phosphorous-containing materials and which technical problem is solved with respect to the prior art.

XII. The respondent argued, insofar as relevant for the present decision, essentially as follows:

The priority of the patent in suit is validly claimed from D5 which teaches a combination of two pretreatment steps without any weldable coating, as is evident from claim 1 and page 22, lines 22 to 24 where the intermediate weldable coating is disclosed merely as an optional feature. It is also not true that the term "unphosphated" cannot be directly and unambiguously derived from D5 since it is the essence of the invention to use these two pretreatment compositions on unphosphated metal substrates and which is presented as a heavy-metal free alternative to phosphating compositions (see page 34, lines 11 to 16). From the background of the invention it is clear that conventional phosphating processes cause the presence of heavy metals, particularly in combination with electrodeposited coatings (see page 1, line 25 to page 2, line 10). It is thus clear that phosphating as well as electrodeposition of a lead-containing composition should be avoided (see page 2, lines 22 to 27).

The erroneous interpretation, namely that the weldable coating is a prerequisite for the electrodeposition, is based on the fact that the paragraph concerning the

electrodeposition is embedded between paragraphs dealing with the weldable coating (see page 27, lines 1 to 21). However, this paragraph clearly refers to the coated metal substrate prepared "according to the invention" and, therefore, encompasses all embodiments according to the invention as described in D5 and not only to the optional embodiment containing a weldable coating. It is evident from the examples that only a sufficient electroconductivity of the pretreated metal surface is necessary for the electrodeposition which is possible without said weldable coating. Therefore a combination of the pretreatment process with a lead-free electrodeposition process, without an intermediate weldable coating is explicitly disclosed by the statement on page 2, lines 22 to 27 of D5. In combination with page 27, lines 8 to 16 this results in the environmentally friendly alternative of a lead-free electrodeposition on (unphosphated) pretreated metal substrates.

The experimental data exemplify the subject-matter of claim 1 of the patent as granted. According to page 31, lines 12 to 15 of D5 steel panels were pretreated and electrocoated with ED6650 directly without application of an intermediate weldable coating. The mentioned ED6650 electrodepositable coating is lead-free as confirmed by the material safety data sheet D17 for the cationic electrodeposition bath ED6650, which does not mention lead as a component hazardous material. In contrast, the material safety data sheet D18 shows that the product E6127 contains as hazardous material lead silicate. Thus it cannot be argued that the subject-matter of claims 1 and 38 of the main request is only derivable from D5 by making multiple selections.

It is clear to the person skilled in the art that the optional phosphating step (see D5, page 7, lines 6 to 12) should not be used in order to avoid the presence of heavy metals in the claimed process. The definition "unphosphated" implies "heavy metal free". The passage at page 2, lines 22 to 27 clearly corresponds to a preferred embodiment of D5 and the applicant can restrict itself to this specific embodiment without losing the right to priority.

It is admitted that D17 and D18 are post-published but the composition of ED6650 as given in D17 has not been changed. There have been difficulties to provide the corresponding evidence. The accompanying persons can confirm that the composition of ED6650 has not changed over time. It is surprising that now it is questioned by the appellant that ED6650 is a lead-free electrodepositable coating since this fact has been accepted all the time in the entire proceedings, e.g. the Opposition Division acknowledged it in its decision (see page 12, first paragraph of the impugned decision).

The differences of the coated substrate of claim 1 with respect to D1 are that it does not have an intermediate weldable coating. D1 does not teach that the omission of this weldable coating would lead to an improved coating. Particularly in the light of D3 (see column 10, lines 44 to 56) and D4 (see column 2, lines 5 to 8), which both teach that the lead-free electrodepositable coating should be applied to a phosphated metal surface, this is a surprising effect of the claimed coating.

It is admitted that the two new auxiliary requests are late filed. However, they do not change the subject-matter discussed since the deletion of the dependent claims 29 to 35 of the main request was already comprised in the withdrawn previous auxiliary requests, while the feature concerning the phosphorous-containing material was one of the alternatives in the independent claims from the beginning. Claim 1 of the new auxiliary requests has been only restricted to an embodiment which is also covered by independent claims 40 and 41 of the main request. Therefore the appellant cannot be surprised since it could have made tests with such an embodiment or carried out a further search in this respect much earlier. Therefore these two auxiliary requests should be admitted into the proceedings.

Reasons for the Decision

1. *Entitlement to the priority D5 (Articles 87 and 88 EPC)*

In accordance with Article 87 EPC a European patent application is only entitled to priority in respect of "the same invention" as was disclosed in the previous application. In its decision G 2/98 (*supra*) the Enlarged Board of Appeal stated that the concept of "the same invention" was to be interpreted narrowly and equated it with "the same subject-matter" in Article 87(4) EPC 1973. This means that the priority of a previous application in respect of a claim in a European patent (application) is to be acknowledged only if the person skilled in the art can derive the subject-matter of the claim directly and unambiguously, using common general knowledge, from the previous

application as a whole (see Case Law of the Boards of Appeal, 6th edition 2010, chapter V.B.1 to V.B.1.9).

Furthermore, according to the established case law a generic disclosure implicitly encompassing two or more alternative embodiments cannot generally give rise to a right of priority to one specific embodiment, if the latter is neither explicitly nor implicitly disclosed (see Case Law of the Boards of Appeal, 6th edition 2010, chapter V.B.1.9).

1.1 D5 is the US application 09/469 259 from which the European patent application filed on 4 December 2000 and underlying the patent in suit claims the filing date of 21 December 1999 as effective date, pursuant to Article 89 EPC.

1.2 The respondent's arguments that the priority is validly claimed from D5 for the subject-matter claimed in the independent claims 1, 38, 40 and 41 of the patent as maintained cannot hold for the following reasons.

1.3 First of all, it is not true that it is the essence of the invention of D5 to use the two (or one) pretreatment composition(s) on **unphosphated** metal substrates and that the application on **unphosphated** metal substrates is implicit from the statement "It would be desirable to provide a simplified pretreatment process free of heavy metals for coating metal substrates, including mixed metal substrates such as are commonly found on today's automobile bodies. Such a pretreatment process, when combined with a lead-free electrodeposition process, would represent a heavy-metal free alternative for providing corrosion

resistance to metal substrates" (see page 2, lines 22 to 27).

1.3.1 This conclusion of the Board is induced by the fact that D5 with respect to the field of the invention states: "This invention relates **generally** to corrosion-resistant substrates and, **more particularly**, to ferrous and non-ferrous metal substrates having environmentally friendly chrome-free and nickel-free coatings thereon which inhibit corrosion of the metal substrate" (see page 1, lines 19 to 22).

Therefore already from the introductory portion of the description of D5 it is clear that the most general teaching of the invention is **not** restricted to environmentally friendly chrome-free and nickel-free coatings, but that only particular embodiments might be restricted to these specific coatings.

1.3.2 The following description of the background of the invention in D5 mentions that conventional phosphate conversion coating compositions typically contain heavy metals such as nickel and that post-rinses contain chrome, while cationic electrodeposition compositions typically contain lead as pigment or soluble salt (see page 1, line 25 to page 2, line 10) and that nickel-free phosphate coating compositions and chrome-free rinsing compositions are highly desirable but that the latter are often suitable for use over a limited number of substrates or over substrates that must be phosphated first (see page 2, lines 11 to 21).

This passage in D5 does **not** support the respondent's position either since it only teaches the person

skilled in the art which problems the prior art is confronted with and confirms to him that environmentally friendly compositions and processes should avoid nickel and chrome which represent non-desired heavy metals.

1.3.3 The conclusion of point 1.3.1 above is also fully supported by the description of the invention of D5 given in its independent claims 1, 39, 42 and 43 which is **not** restricted to such environmentally friendly nickel-free and chrome-free compositions and processes:

"1. A coated metal substrate comprising:
(a) a metal substrate;
(b) a first pretreatment composition deposited upon at least a portion of the substrate, the first pretreatment composition comprising a transition element-containing material which comprises a transition element selected from the group consisting of Group IIIB elements, Group lVB elements, lanthanide series elements and mixtures thereof; and
(c) a second pretreatment composition comprising a reaction product of at least one epoxy-functional material or derivative thereof and at least one material selected from the group consisting of phosphorus-containing materials, amine-containing materials, sulfur-containing materials and mixtures thereof deposited upon at least a portion of the first pretreatment composition."

"39. A method for preparing a coated metal substrate, comprising the steps of:
(a) treating a surface of a metal substrate with a first pretreatment composition comprising a transition

element-containing material which comprises a transition element selected from the group consisting of Group IIIB elements, Group IVB elements, lanthanide series elements and mixtures thereof; and
(b) applying a second pretreatment composition comprising a reaction product of at least one epoxy functional material or derivative thereof and at least one material selected from the group consisting of phosphorus-containing materials, amine-containing materials, sulfur-containing materials and mixtures thereof over at least a portion of the first pretreatment composition to form a substrate having a pretreated surface."

"42. A coated metal substrate comprising:
(a) a metal substrate;
(b) a pretreatment composition deposited upon at least a portion of the substrate, the pretreatment composition comprising (1) a transition element containing material which comprises a transition element selected from the group consisting of Group IIIB elements, Group IVB elements, lanthanide series elements and mixtures thereof; and (2) a reaction product of at least one epoxy-functional material or derivative thereof and at least one material selected from the group consisting of phosphorus-containing materials, amine-containing materials, sulfur-containing materials and mixtures thereof deposited upon at least a portion of the first pretreatment composition."

"43. A method for preparing a coated metal substrate, comprising the step of treating a surface of a metal substrate with a pretreatment composition comprising

(1) a transition element-containing material which comprises a transition element selected from the group consisting of Group IIIB elements, Group IVB elements, lanthanide series elements and mixtures thereof; and (2) a reaction product of at least one epoxy functional material or derivative thereof and at least one material selected from the group consisting of phosphorus-containing materials, amine-containing materials, sulfur-containing materials and mixtures thereof over at least a portion of the first pretreatment composition to form a substrate having a pretreated surface."

These claims 1, 39, 42 and 43 of D5, which form the basis of the claims 1, 38, 40 and 41 of the main request (as maintained), **neither** exclude a phosphated metal substrate, **nor** nickel and chrome or any lead-containing electrodepositable coating composition.

1.3.4 When asked by the Board at the oral proceedings why the independent claims do not contain any restrictions concerning nickel and chrome, if that were the essence of the invention, the respondent answered that this feature would now be implicit from the use of "an unphosphated metal substrate" in the claims of the patent as maintained. This argument cannot hold for the reasons that follow.

From the detailed description of D5 it is evident that the claimed pretreatment process can be applied to **two alternative types** of substrates, namely:
i) unphosphated metal substrates, or
ii) phosphated metal substrates (see page 7, lines 7 to 16).

The quoted passage on page 7, lines 7 to 12 of D5 discloses "Optionally, **a phosphate-based conversion coating can be applied to the metal substrate**. Suitable phosphate conversion coating compositions include those known in the art, such as zinc phosphate, optionally modified with **nickel**, iron, manganese, calcium, magnesium or cobalt. Useful phosphating compositions are described in U.S. Patents …" and thus contradicts the respondent's argument that D5 in essence would relate to the treatment of unphosphated metal substrates.

From this passage it can also be derived that such a phosphating treatment does **not** necessarily result in the incorporation of heavy metals such as nickel (although such an embodiment is explicitly included in the teaching of D5, see above) in the zinc phosphate since it may also be modified by e.g. iron, calcium or magnesium. The latter elements are not mentioned among those to be avoided according to the background of the invention (see point 1.3.2 above).

It is thus **not** evident that phosphating should be avoided and that an unphosphated metal substrate has to be treated in order to avoid nickel and chrome since there exist phosphating compositions being heavy metal free in that sense of D5. The person skilled in the art is therefore not automatically led to an unphosphated metal substrate, but can avoid heavy metals by making another selection when applying a phosphate coating according to the environmental needs.

1.4 From these claims 1, 39, 42 and 43 it is also apparent that there exist **two further alternatives** for applying the claimed pretreatment composition, namely:
iii) either in a two-step procedure wherein first the pretreatment composition comprising the transition element-containing material is deposited upon the substrate and thereafter a second pretreatment composition comprising the reaction product of the at least one epoxy functional material is deposited upon at least a portion of the first pretreatment composition, or
iv) in a one-step procedure comprising a single pretreatment composition comprising the transition element-containing material and the said reaction product of the at least one epoxy functional material.

This conclusion is supported by the detailed description of D5 which first discloses the two-step procedure (see e.g. page 7, line 13 to page 22, line 8) and then shortly describes the alternative one-step procedure with a single pretreatment composition (see page 22, lines 9 to 11).

1.5 The further independent claims 36 and 41 of D5 relate to preferred embodiments of claims 1 and 39 and define an additional weldable coating comprising an electroconductive pigment and a binder deposited on the pretreated surface, while the further independent claim 37 relates to an alternative embodiment of product claim 1 wherein the second pretreatment composition comprises an ester of a phosphorus-containing material deposited upon at least a portion of the first pretreatment composition.

1.5.1 Thus the subject-matter of claims 36 and 41 corresponds to the passage in the detailed description of D5 which discloses the optional weldable coating (see page 22, lines 22 to 27). The preferred embodiments of the weldable coating are thereafter described (see page 22, line 27 to page 27, line 26).

1.5.2 Therefore the invention of D5 encompasses yet **two further alternatives** of:

v) not applying a weldable coating, and

vi) applying a weldable coating.

According to preferred embodiments of the weldable coating the "Non-limiting examples of suitable electroconductive pigments include zinc (preferred), aluminium, iron, graphite, iron phosphide, **nickel**, tungsten and mixtures thereof" (see page 23, lines 3 to 5).

Thus it is evident that either an environmentally friendly weldable coating being nickel-free and chrome-free or a weldable coating containing nickel can be applied to the pretreated metal substrate. It is also clear that when applying a weldable coating the person skilled in the art yet again can make a further selection taking account of the environmental needs.

1.6 Dependent product claim 35 is the only claim of D5 defining an electrodeposited coating, which is however deposited upon at least a portion of the weldable composition. Claim 35 depends solely on claim 34 which defines a metal phosphate coating on the weldable composition; said claim 34 depends solely on claim 29

which defines the weldable coating and which depends solely on claim 1.

1.6.1 There exists only one passage in the detailed description at page 27, lines 8 to 16 of D5 concerning the electrodeposition of coating compositions. This passage is, however, embedded between other paragraphs explicitly relating to the weldable coating (compare page 27, lines 1 to 26) and it states "Since the coated metal substrate prepared according to the present invention is electroconductive, topcoating of the coated substrate by electrodeposition is of particular interest. Compositions and methods for electrodepositing coatings are well known to those skilled in the art and a detailed discussion thereof is not believed to be necessary. Useful compositions and methods are discussed in U.S. Patent No. 5,530,043 (relating to anionic electrodeposition) and U.S. Patents Nos. 5,760,107, 5,820,987 and 4,933,056 (relating to cationic electrodeposition) which are hereby incorporated by reference."

1.6.2 It is undisputed that this passage does not explicitly disclose any lead-free electrodepositable composition. It is further undisputed that among the four cited U.S. patents (which include D3 and D4) there are at least two relating to lead-containing electrodepositable coating compositions.

Consequently, D5 generally teaches the person skilled in the art to optionally deposit an electrodepositable coating composition onto metal substrates as defined in the independent claims 1, 39, 42 and 43. This teaching

thus inherently comprises at least the **further two alternatives** of:
vii) electrodepositing a lead-containing coating composition, or
viii)electrodepositing a lead-free coating composition.

1.6.3 The said definition "… the **coated** metal substrate prepared according to the present invention …" of page 27, lines 8 to 10 is interpreted by the Board to refer to the aforementioned weldable coating but even if it were to be interpreted to refer only to the pretreatment coating applied onto the (unphosphated) metal substrate as disclosed in the examples of D5 it is not conclusively derivable that it is a lead-free coating composition which has to be applied.

1.6.4 According to the examples of D5 unphosphated metal substrates were treated with the pretreatment compositions A or B and then "electrocoated with ED6650, an electrodepositable coating commercially available from PPG Industries Inc." (see page 31, lines 2 to 13). The description of D5 is silent as to whether or not this electrocoating composition ED6650 is lead-free.

As a reaction to the Board's communication annexed to the summons to oral proceedings, which was entirely silent with respect to the examples and the composition ED6650, the respondent submitted with its letter dated 5 December 2011 for the first time in the entire proceedings the material safety data sheets D17 and D18 and argued that the electrocoating composition ED6650 is lead-free as evidenced by D17 in view of D18.

At the oral proceedings, when questioned by the Board as to how these two documents - D17 has a date of 3 May 2001 (i.e. more than 2 years after the filing date of D5) and relates to a cationic electrodepositable composition ED6650 not specifying any (hazardous) lead component - can prove which components were comprised in the composition ED6650 used for preparing the examples according to D5 before 21 December 1999, it admitted that D17 and D18 were post-published, but then argued that the composition of ED6650 as given in D17 has not been changed since and that the accompanying persons could confirm this.

The Board remarks in this context that the respondent must have been aware of the fact that D17 is post-published but its aforementioned letter is not only totally silent in this respect but also with respect to the argument that the composition has not changed between 21 December 1999 and 3 May 2001. Furthermore, the two accompanying persons have never been proposed as witnesses or as technical experts, let alone with respect to the composition of said ED6650, except as late as the oral proceedings.

Under these circumstances the Board is not prepared to hear them in one or the other capacity, quite apart from the question whether the appellant could be considered to be prepared for this eventuality at the oral proceedings. As a result, there is only the post-published evidence D17 which, however, cannot be considered as conclusive regarding the composition of ED6650 more than two years prior.

1.6.5 The Board further remarks in this context that the burden of proving this allegation made as late as with letter of 5 December 2011 concerning the composition ED6650, which has been disputed by the appellant, is with the respondent who bases part of its arguments concerning the validity of the priority on this composition ED6650. The validity of the priority was an issue of the impugned decision and has remained so in the entire appeal proceedings. Simply making an allegation purportedly supported by post-published evidence cannot shift this burden of proof to the appellant or even the Board.

The further argument of the respondent that it has been accepted in the entire appeal proceedings that ED6650 is a lead-free electrodepositable coating composition, as it has been acknowledged as such by the Opposition Division in its decision (see page 12, first paragraph) and never been challenged by the appellant or the Board, is considered not to be relevant since it is exactly this decision which has been appealed. Further, it is the respondent which introduces the argument, therefore bears the burden of proof.

1.6.6 Taking account of the points 1.6 to 1.6.5 above it is clear that neither the examples of D5 as such nor the statement in D5 concluding the examples (page 34, lines 11 to 16): "the coating compositions of the present invention provide a heavy-metal free alternative to conventional phosphating compositions …" - which has to be interpreted as being limited to the two pretreatment compositions exclusively used for these examples when taking account of the other considerations above - provide a clear and unambiguous

basis for the combination of the features "unphosphated metal substrate" and "lead-free electrodepositable coating composition deposited upon the (second) pretreatment composition".

Consequently, the examples of D5 with said ED6650 electrodepositable coating composition **cannot** conclusively be linked with the lead-free electrodeposition process mentioned at page 2, lines 22 to 27 (see point 1.3 above).

1.7 Taking account of all considerations above the result is that the four sets of each two alternatives given in the description, in combination with the claims (see above, points i) to viii)) cannot provide a direct and unambiguous disclosure for the subject-matter of the independent claims 1, 38, 40 and 41 of the main request in their present form, individualized therefrom. As a result the priority of that application cannot be validly claimed. The result is that the filing date of 4 December 2000 is the effective date for the claims of the main request.

2. *Inventive step (Article 56 EPC)*

In view of the conclusion reached on priority, all documents published before the filing date of the patent in suit have to be taken into consideration under Article 54 EPC. Document D1 was published on 8 June 2000 and thus belongs to the prior art for the patent in suit under Article 54(2) EPC.

2.1 Since the Board comes to the conclusion that the subject-matter of claim 1 of the main request lacks

inventive step over the teaching of D1 there was no need to verify whether or not claim 1 complies with Article 54 EPC.

2.2 D1 discloses a process for providing a weldable, coated metal substrate including the pretreatment of a metal (i.e. unphosphated) substrate (see page 4, lines 5 to 22) with a reaction product of one or more epoxy-functional materials and one or more materials selected from phosphorous-containing materials, amine-containing materials and mixtures thereof (see page 5, lines 6 to 9) comprised in a solution in combination with one or more group IVB element-containing materials, the latter can also be applied in a separate step, i.e. a two-step pretreatment (see page 12, lines 10 to 24). Also the examples of D1 (see e.g. example 2) were made on unphosphated metal substrates, with a weldable coating on the pretreatment composition (see pages 20 to 24).

D1 discloses the same lead-containing and lead-free electrodepositable coating compositions as the patent in suit since the same four US patents are referred to in an identical passage (see page 19, lines 14 to 22).

2.2.1 The Board considers that the person skilled in the art would select the lead-free electrodepositable coating compositions when confronted with the objective technical problem of providing an environmentally friendly process when starting from the teaching of D1. Thus he would apply either the one-step or two-step pretreatment onto unphosphated metal substrates followed by the deposition of the weldable coating over the pretreated substrate and would finally deposit the

lead-free electrodepositable coating onto the weldable coating.

Thereby the person skilled in the art arrives at the subject-matter of product claim 1 of the main request in an obvious manner. Claim 1 of the main request therefore lacks inventive step and the main request is not allowable.

2.2.2 In this context the Board further remarks that the two pretreatment steps according to the patent in suit need not be different but can use identical compositions (see patent, paragraph [0020]) and that it is not apparent as to why a double treatment with identical solutions should involve inventive step since no advantages can be seen, since the patent in suit is silent in this respect, and corresponding arguments have also not been presented by the respondent.

2.2.3 The respondent's arguments in support of inventive step cannot hold for the following reasons.

First of all, the respondent has **not** disputed the above disclosure of D1 but has only argued that claim 1 does not allow for an intermediate weldable coating. This cannot be followed since claim 1, due to the used term "comprising", does not exclude such a weldable coating which, as evidenced by the dependent claims 29 to 35 of the main request, is also explicitly included in the subject-matter of claim 1 of the main request.

Secondly, taking account of the fact that the weldable coating is not excluded by this claim the further arguments based on D3 and D4, namely that D1 does not

teach that the omission of this weldable coating would lead to an improved coating, are not relevant and need not be considered.

3. *Admissibility of the new auxiliary requests*

3.1 As a consequence of the discussion of inventive step of claim 1 of the main request the respondent filed amended versions of the first and second auxiliary requests (see points IX and X above) which replaced all auxiliary requests filed earlier in the appeal proceedings and requested admitting the late filing of these requests. The appellant objected to this late filing.

3.2 In the present case there is, however, no need to deal with the aspect of the late filing of these two auxiliary requests since they clearly do not comply with Article 123(2) EPC for the reasons that follow.

3.2.1 Claim 1 as maintained by the Opposition Division required a second pretreatment composition comprising a reaction product of at least one epoxy functional material or derivative thereof and "at least one material selected from the group consisting of phosphorus-containing materials, amine-containing materials, sulfur-containing materials and mixtures thereof" (see point II above). This group consisting of the three specified materials and their mixtures therefore is made up of seven possibilities.

3.2.2 According to the amendment now made in the claims 1 of the first and second auxiliary requests (see points IX and X above) this group has been restricted by the

deletion of the other six possibilities to a single possibility, namely the group of phosphorous-containing materials.

The relevant description of the patent in suit (see patent, paragraphs [0030] and [0040] to [0049]), which is identical with that of the underlying application as originally filed (corresponding to the published WO-A-01 46495; see page 12, lines 8 to 12; page 12, line 17 to page 17, line 17), cannot provide a basis for this amendment since the reaction product of one or more epoxy-functional materials or derivatives thereof with phosphorous-containing materials is neither presented as a preferred embodiment in comparison to the other two possible materials or their mixtures, nor presented as one having as such particular advantages. The description only mentions suitable materials for forming the reaction product by methods well known to those skilled in the art.

To the contrary, the reaction product of one or more epoxy-containing materials or derivatives and one or more **amine-containing** materials is presented as an alternative **preferred** embodiment (see patent, paragraph [0050]; see WO-A-01 46495, page 17, lines 18 to 21).

Also, both the pretreatment compositions A and B according to the examples of the patent in suit comprise reaction products of phosphorous-containing materials **and** amine-containing materials (see patent, paragraphs [0092] to [0096] corresponding to page 29, line 7 to page 30, line 26 of WO-A-01 46495) and thus do not support this selection either.

3.2.3 The amendment made in claims 1 of the two auxiliary requests therefore amounts to taking a single material from the original list of seven alternative materials.

In fact, as the principles to be applied to establish a "direct and unambiguous disclosure" for the purposes of priority and original disclosure (Article 123(2) EPC) are the same (see G 2/10, to be published in OJ EPO, point 4.3 of the reasons) this amounts to yet a further individualisation, which in this form finds no such direct and unambiguous disclosure. Hence the amendment made in claims 1 of the first and second auxiliary requests clearly contravenes Article 123(2) EPC. The first and second auxiliary requests are therefore not admitted in the proceedings.

3.2.4 The respondent's arguments to the contrary cannot hold for the following reasons.

First of all, it has not disputed that the amendment amounts to singling out but has principally only argued that claim 1 as maintained would form the basis for the amendment made. For the reasons given above this argument cannot hold since claim 1 as maintained contains the same 7 alternative materials, so does not in itself provide adequate support for claim 1 as amended according to these two auxiliary requests. Likewise the independent claims 40 and 41 as maintained do not support this amendment either since their pretreatment composition though having been restricted to "a reaction product of at least one epoxy-functional material or derivative thereof and at least one material selected from the group consisting of phosphorus-containing materials and mixtures thereof

with amine-containing materials and sulphur-containing materials" (see point II above), and thereby still relates to a list of 3 alternative materials, all of which comprise phosphorus-containing materials.

In this context the Board remarks that the respondent has neither submitted any further argument at the oral proceedings with respect to an effect which would be obtained with the restriction to phosphorous-containing materials nor which technical problem would be solved with this particular subject-matter of claim 1 with respect to the prior art and particularly with respect to D1.

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:

G. Nachtigall H. Meinders