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**Datasheet for the decision  
of 5 May 2011**

**Case Number:** T 1314/10 - 3.3.07

**Application Number:** 95935582.7

**Publication Number:** 0737513

**IPC:** B01J 21/06

**Language of the proceedings:** EN

**Title of invention:**

Titanium oxide photocatalyst structure and method of  
manufacturing the same

**Patent Proprietors:**

Nippon Soda Co., Ltd.

**Opponents:**

- I. AGC Flat Glass Europe SA  
II. PPG Industries, Inc.

**Headword:**

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**Relevant legal provisions:**

EPC Art. 113(2), 114(2)  
RPBA Art. 12(1), 12(2), 12(4), 13(1), 13(3), 15(1)

**Relevant legal provisions (EPC 1973):**

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**Keyword:**

"Main Request, Auxilairy Requests I and II not admitted into  
the proceedings"

**Decisions cited:**

G 0004/95

**Catchword:**

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Case Number: T 1314/10 - 3.3.07

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.07  
of 5 May 2011

**Appellants:**  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 31 March 2010  
revoking European patent No. 0737513 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** J. Riolo  
**Members:** F. Rousseau  
M.-B. Tardo-Dino

## Summary of Facts and Submissions

- I. The Appellants (Patent Proprietors) lodged an appeal against the decision of the Opposition Division issued in writing on 31 March 2010 revoking European patent No. EP-B-0 737 513 in respect of European patent application No. 95935582.7 for lack of inventive step.
- II. Two notices of opposition had been filed by Respondents I and II requesting revocation of the patent as granted in its entirety on the grounds of lack of novelty and inventive step under Article 100(a) EPC 1973. The oppositions were based *inter alia* on the following documents:
- D1 EP-A-0 581 216
- D2 EP-A-0 590 477
- D6 H. Bach and H. Schroeder, "Kristallstruktur und optische Eigenschaften von dünnen organogenen Titanoxyd-Schichten auf Glasunterlagen", *Thin Solid Films*, 1 (1967/68), pages 255-276, Elsevier, and translation thereof in English
- D7 US-A-5 165 972
- D8 Y. Takahashi and Y. Matsuoka, "Dip-coating of TiO<sub>2</sub> films using a sol derived from Ti(O-*i*-Pr)<sub>4</sub>-diethanolamine-H<sub>2</sub>O-*i*-PrOH system", *Journal of Materials Science* 23 (1988) page 2259-2266
- D9 W. Xu *et al*, "Preparation and characterization of TiO<sub>2</sub> films by a novel spray pyrolysis method", *Mat. Res. Bull.*, Vol. 25, pages 1385-1392, 1990 and
- D10 L. Meng *et al*, "The effect of substrate temperature on the properties of sputtered titanium oxide films", *Applied Surface Science* 65/66 (1993), pages 235-239.

III. The present appealed decision was based on the sole set of claims 1-6 submitted on 1 February 2005 which, according to a first appeal decision T 700/05, was found to meet the requirements of Articles 123(2), (3) and 84 EPC, independent claims 1, 5 and 6 reading as follows:

"1. A titanium dioxide photocatalyst structure comprising:

a transparent soda lime glass substrate and

a titanium dioxide film having photocatalytic activity and a linear light transmittance of at least 50% for light having a wavelength of 550 nm,

wherein the titanium dioxide film contains anatase crystals and has a thickness of 0.1 to 5µm."

5. A method for producing a titanium dioxide photocatalyst structure according to any of claims 1 to 4, comprising a producing process which includes the step of:

forming a titanium dioxide film on a transparent soda lime glass substrate by performing a pyro-sol method, a dipping method, a printing method or a CVD method.

6. Use of the titanium dioxide photocatalyst structure according to any of claims 1 to 4 for removing carbon dioxide and air pollutants to render indoor space antibacterial."

IV. The opposition division held that the claimed subject-matter was novel over the prior art D2, D6 and D10, but lacked inventive step. D2 was considered to represent the closest state of the art, because that document also related to metal-oxide thin films coated on architectural materials, such as window glass, that had excellent deodorising, anti-mould and anti-soiling properties imparted by the photocatalytic properties of the metal oxide. According to the opposition division, the skilled person would have been prompted in view of D2 to use the features defined in claim 1 as granted in order to prepare a commercial glass window with the desired transparency and photocatalytic activity. D2 indicated that titanium oxide of anatase structure was an appropriate photocatalytic material for the thin metal-oxide film and that the thickness of the film should be in the microns range if high transparency of the film was desired. The use of soda lime glass for the architectural material was obvious as D2 taught to apply the photocatalytic film on window glass. The problem of sodium diffusion into the titanium oxide, when a soda lime glass substrate was used, occurred only in the first 80 nm of the titanium oxide film as demonstrated by D6 and could therefore be ignored when a titanium oxide film having a thickness in the microns range was intended. The selection of a linear light transmittance of at least 50% for light having a wavelength of 550 nm, was arbitrary, as it neither contributed to improve the transparency over the whole visible range, nor brought about higher photocatalytic activity. This feature therefore did not contribute to an inventive step. Hence, having regard to the state of

the art, the subject-matter of claim 1 was obvious to the skilled person.

V. With the statement setting out the grounds for appeal, the Appellants submitted on 30 July 2010 two sets of three claims each constituting their Main and First Auxiliary Requests, the claims of the Main Request reading as follows:

"1. A titanium dioxide photocatalyst structure comprising:

a transparent soda lime glass substrate and

a titanium dioxide film having photocatalytic activity and a linear light transmittance of at least 50% for light having a wavelength of 550 nm,

wherein, the titanium dioxide film is directly formed on the transparent soda lime glass substrate, the titanium dioxide film contains anatase crystals and has a thickness of 2.3 to 4.8  $\mu\text{m}$ , or

wherein a transparent pre-coat film composed of  $\text{SiO}_2$  and having a thickness of 0.02 to 0.2  $\mu\text{m}$  is disposed between the transparent soda lime glass substrate and the titanium dioxide film, the titanium dioxide film contains anatase crystals and has a thickness of 1.7 to 4.2  $\mu\text{m}$ .

2. A method for producing a titanium dioxide photocatalyst structure according to claim 1, comprising a producing process which includes the step of:

forming a titanium dioxide film on the transparent soda lime glass substrate by performing a pyro-sol method, a dipping method, a printing method or a CVD method.

3. Use of the titanium dioxide photocatalyst structure according to claim 1 for removing carbon dioxide and air pollutants to render indoor space antibacterial."

The claims of the Auxiliary Request were restricted to the embodiment of the main request comprising a transparent pre-coat film composed of  $\text{SiO}_2$ . According to the statement setting out the grounds for appeal, it was an object of the invention in view of D2 to provide a photocatalyst structure having improved decomposition activity. Said object had been attained by the subject-matter of claim 1. The Appellants argued that D2 did not provide any hint that structures with a titania film having a thickness lying outside of the claimed range would exhibit either inferior decomposition activity or lower light transmittance. This also was not suggested by any of documents D6, D7 or D10. Thus, an inventive step should be acknowledged. No argument in connection with the method for forming the titanium dioxide film on the transparent soda lime glass substrate was presented.



VI. In response to the statement setting out the grounds of appeal, Respondents I and II submitted that the insertion in claim 1 of the two specific ranges of thickness for the titania film, the end points of which were disclosed only in connection with specific situations shown in the examples, contravened the requirements of Article 123(2) EPC. The claims were also held to be anticipated by D1 and/or D2 and to lack inventive step starting from D2 as closest prior art. It was, in particular, pointed out that the thickness of the metal oxide layer as defined in claim 1 was not an additional distinguishing feature over document D2 and that any effect associated with it was inevitably achieved by the teaching of D2. Thus, the titania film thickness defined in the amended claims could not contribute to an inventive step. The possibility of applying the titanium dioxide film directly on the transparent substrate was taught in D2 and the use of a SiO<sub>2</sub> pre-coat film having a thickness of 20 nm to prevent the sodium from migrating into the anatase phase was furthermore known from D6. Consequently, the subject-matter of the claims as amended lacked inventive step.

VII. A summons to attend oral proceedings before the Board was dispatched on 9 February 2011. In preparation of the oral proceedings, the Board issued a communication on 24 February 2011 in which a preliminary opinion of the Board on inventive step was expressed. As the patent in suit aimed at providing a titanium dioxide photocatalyst structure that had excellent photocatalytic activity and light transmissivity, especially for glass windows, D2 was considered, in particular in view of the embodiments described in

examples 1 to 3, to represent the closest state of the art for assessing inventive step. Having regard to the results shown in figure 3 and paragraphs [0020] to [0022] of the patent in suit, it appeared that the problem solved by the claimed subject-matter over the closest prior art would be the provision of a structure having sufficient photocatalytic activity and transparency. With a view to solving this problem, the choice of a transparent soda lime glass, which was the most current architectural glass, appeared to be obvious to the skilled person, as well as the use of a titanium dioxide layer which implicitly was the preferred metal dioxide layer in document D2. D2 also taught that a transparent thin film having deodorising properties could be obtained by setting the film thickness of the metal oxide to several microns or thereabouts and its example 3 suggested that a sintering temperature between 200°C and 400°C provided adequate results in terms of deodorising properties for a thin film of titanium dioxide. The sintering conditions used in document D2 appeared to suggest to the skilled person that a titanium dioxide film containing anatase crystals was obtained. It also appeared in view of D8 and D9 to be known from the skilled person that the anatase phase provided higher visible light transmission. The skilled person searching for structures having sufficient photocatalytic activity and transparency, would therefore have tried film thicknesses in the range of several microns or thereabouts, thereby arriving without exercising any inventive skill to a structure falling within the ambit of claim 1 then on file. Knowing that the transparency and the photocatalytic activity depended on the amount of the anatase phase,

*i.e.* on the thickness of the layer, the skilled person would have been able, if he so wanted, to find based on routine experimentation a range providing a suitable compromise between transparency and photocatalytic activity. Values of at least 50% for the linear light transmittance at a wavelength of 550 nm did not appear to contribute to inventive step as they seemed to be the automatic result of setting the film thickness to the values recommended in D2. Starting from the embodiments shown in figures 7 to 9 of D2, it appeared therefore that the skilled person who wanted to provide a structure having sufficient photocatalytic activity and transparency would have arrived at structures falling within the ambit of claim 1 without any inventive activity.

VIII. With their letter dated 1 April 2011, the Appellants submitted in replacements of the claims then on file two sets of claims forming the basis for their Main and Auxiliary Request I. In comparison to the claims submitted with the statement setting out the grounds of appeal, the amendments proposed consisted in restoring the original range of 0.1 to 5  $\mu\text{m}$  for the thickness of the titanium dioxide film and in defining that the titanium dioxide film was obtained by a pyro-sol method. Accordingly, claim 1 of those requests read as follows:

*Main Request*

"1. A titanium dioxide photocatalyst structure comprising:

a transparent soda lime glass substrate and

a titanium dioxide film having photocatalytic activity and a linear light transmittance of at least 50% for light having a wavelength of 550 nm, wherein the titanium dioxide film contains anatase crystals and has a thickness of 0.1 to 5 µm, and wherein the titanium dioxide photocatalyst structure is obtainable by forming a titanium dioxide film on a transparent soda lime glass substrate with a pyro-sol method."

*Auxiliary Request I*

- "1. A method for producing a titanium dioxide photocatalyst structure comprising  
  
a transparent soda lime glass substrate and  
  
a titanium dioxide film having photocatalytic activity and a linear light transmittance of at least 50% for light having a wavelength of 550 nm,  
  
wherein the titanium dioxide film contains anatase crystals and has a thickness of 0.1 to 5 µm,  
  
by forming the titanium dioxide film on a transparent soda lime glass substrate with a pyro-sol method."

- IX. The Appellants held that the subject-matter of claim 1 of the Main Request was, compared to claim 1 submitted with letter dated 1 February 2005, further distinguished from the prior art in that the titanium

dioxide layer was obtainable by the pyro-sol method. Contrary thereto, the titanium dioxide films according to document D2 (column 4, lines 33 to 40) were coated on the substrate by spray coating, dip coating, spin coating and sputtering. As discussed in paragraph [0084] of the opposed patent, the pyro-sol method had several advantages. In particular, high activity titanium dioxide films containing anatase crystals could be obtained in such a way as to be highly uniform and have a large area. It was also pointed out, that the formation of the films could be achieved at a temperature which was not higher than the softening temperature of glass, namely a temperature in the range of 400 to 550°C. Working at this temperature had the further advantage that the diffusion of sodium ions from the glass substrate to the film could be retarded. It was the opinion of the Appellants that those advantages and effects could not be expected from any of the cited references because none of them referred to the pyro-sol method forming a SiO<sub>2</sub> (sic) film containing anatase crystals (in the context SiO<sub>2</sub> to be understood as TiO<sub>2</sub>). The subject-matter of claim 1 of the Main Request was, therefore, based on an inventive step. The same arguments also applied to Auxiliary Request I.

- X. With a facsimile letter of 29 April 2011, Respondents I argued that the scope of claim 1 of the Main Request was identical to that underlying the decision under appeal and therefore that it lacked inventive step over D2. Claim 1 of Auxiliary Request I was also considered to be obvious in view of the combined teaching of D2 and D9. D9 was held to teach the production of titanium dioxide films by a pyro-sol method.

XI. During the oral proceedings before the Board, which took place on 5 May 2011, an Auxiliary Request II consisting of claim 1 of Auxiliary Request I was submitted.

XII. The arguments of Respondents I and II can be summarised as follows:

The present requests had been submitted after issuance of the summons to attend oral proceedings and were belated. They put, for the first time in these proceedings, the focus of the invention on the use of the pyro-sol method, something that had never been discussed before. Moreover, the amendments proposed were *prima facie* not allowable. The use of the expression "pyro-sol", which had not been clearly defined, led to a lack of clarity of the amended sets of claims. Particular reference was made to paragraph [0084] of the patent in suit that defined the pyro-sol method as a CVD method. Furthermore, it had not been shown by the Patent Proprietors that the use of the pyro-sol method for producing the titanium dioxide film implied any additional structural feature compared to claim 1 as granted. Any comparison with the structure of comparative example 3 of the patent in suit was flawed, as this structure did not correspond to those disclosed in D2 which were transparent. As this amendment provided no distinguishing structural feature over the claims as granted, it was not suitable to overcome an inventive step objection with the result that the requirements of Rule 80 EPC were not fulfilled. The new requests should therefore be rejected as inadmissible.

XIII. The Appellants' submissions concerning the admissibility of the new requests can be summarised as follows:

The present claims had been filed in reaction to the Board's communication. The amendments did not result in a combination of claims as granted, but from a restriction of the subject-matter of the granted patent to the parts relating to the use of the pyro-sol method. Claim 1 of Auxiliary Request I was based on independent claim 6 as granted, that referred to claims 1 to 5 as granted for the definition of the titanium dioxide photocatalytic structure. It merely corresponded to a restriction of an already existing independent claim, but not to the creation of a new independent claim. Rule 80 EPC was therefore not an issue. The amendments proposed could not be considered as taking the Respondents by surprise, as the pyro-sol method was described in the patent in suit as the most preferred method for producing the titanium dioxide. The pyro-sol method was used in examples 1 to 15 and was in addition amply defined in paragraph [0083] and [0084] of the patent. It was an alternative to the spraying method in which the precursor solution had undergone ultrasonic atomisation. The reference to Chemical Vapour Cracking in paragraph [0084] made it clear that CVC, but not CVD, was meant in said passage. Thus, the definition of this method did not induce any lack of clarity. The patent in suit indicated that the use of the pyro-sol method resulted in highly uniform structures, whereas in D1 and in D2 the titanium dioxide structures obtained with a titanium dioxide sol were less uniform. Particular reference was made to comparative example 3 of the

patent in suit that exhibited little transparency and to the structure described in column 9, lines 31-35 of D2. Thus, the definition of the pyro-sol method as the method for producing the titania film provided a distinguishing feature over D2 on the basis of which inventive step should be analysed. Claim 6 of the patent in suit included a process using the pyro-sol method so that no further search for additional prior art was necessary. Auxiliary Request II consisting of claim 1 of Auxiliary Request I had been submitted in case Auxiliary Request I was held to be inadmissible as it also contained dependent claims. The new requests were therefore admissible.

XIV. The Appellants requested that the decision under appeal be set aside and the patent be maintained on the basis of the claims of the Main Request (claims 1 to 5) or alternatively of the claims of Auxiliary Request I (claims 1 to 4), both filed on 1 April 2011, or of the sole claim of Auxiliary Request II filed during the oral proceedings before the Board.

XV. Respondents I and II requested that the appeal be dismissed. They further requested that the Main and Auxiliary Requests I and II be rejected as inadmissible.

XVI. At the end of the oral proceedings, the decision of the Board was announced.



## **Reasons for the Decision**

1. The appeal is admissible.

### *Admissibility of the Requests*

2. All the requests now on file were submitted on 1 April 2011, to wit, about one month before the oral proceedings. According to Article 12(2) RPBA, first sentence, the statement of grounds of appeal shall contain a party's complete case and according to paragraph (4) of this article, requests that could have been presented in the first instance proceedings can be held inadmissible in appeal proceedings. Article 13(1) RPBA specifies some of the criteria that a board shall apply in exercising its discretion to admit and consider amendments to a party's case, namely complexity of the subject-matter submitted, the current state of the proceedings and the need for procedural economy, while Article 13(3) RPBA adds that amendments sought after oral proceedings have been arranged shall not be admitted if they raise issues which the Board or the other parties cannot reasonably be expected to deal without adjournment of the oral proceedings. According to the established case law of the Boards of Appeal, unless exceptional reason due to the procedural developments in the appeal, new amended sets of claims may be admitted only if they do not extend the scope or the framework of debate as delimited by the decision under appeal, the statement of grounds of appeal and the reply of the parties thereto, and in addition the other parties and the Board are in the position without adjournment of the oral proceedings to ascertain that

they overcome the outstanding objections without raising new ones.

3. As to the Appellants' justification for the late filing of the new requests, the explanation that they were filed in reaction to the Board's communication is not acceptable in the present case, because the argumentation in support of the Board's preliminary opinion that the claimed subject-matter lacked inventive step over D2 as closest prior art corresponds in substance to the reasoning already developed in the decision under appeal and reiterated by the Opponents in response to the grounds of appeal. A Board communication under Article 15(1) RPBA is intended as guidance for the oral proceedings. It helps the parties to focus their argumentation on issues that the Board considers crucial for reaching its decision. Where the Board's communication contains a preliminary opinion based solely on the issues raised by the parties, that communication cannot be taken as a pretext to submit new requests that the parties could have filed earlier. In decision G 4/95 of the Enlarged Board of Appeal (OJ 1996, 412), it is recalled that both opposition and opposition appeal procedures are primarily written procedures. In principle, oral proceedings are scheduled at a point in time within an opposition or opposition appeal procedure when the written submissions of all parties, including the written presentation of facts and evidence by all parties, are complete. In the present case, the appellants, at the latest after the decision to revoke the patent, should have submitted one or more additional set(s) of claims directed to the use of the pyro-sol method for forming the titanium dioxide film, if they considered that

those embodiments were inventive over D2 and that adequate protection was needed for them. They chose when submitting their grounds of appeal, however, not to file any such requests. In failing to do so, they did not file their complete case as required by Article 12(2) RPBA.

4. As to the matters raised by the claims, until the submission of the Main Request and Auxiliary Request I by Appellants with their letter dated 1 April 2011, the issue of inventive step, both in the first instance and in appeal proceedings, boiled down to the question of whether the skilled person would have been prompted to use a soda lime glass substrate and a titanium oxide film comprising anatase phase crystals, said film having the thickness and the linear light transmittance defined in claim 1, optionally in combination with a transparent pre-coat film composed of SiO<sub>2</sub>. The gist of the invention was described as lying in the combined use of those features in order to obtain simultaneously the necessary photocatalytic effect and transparency that were required for use of the structures as glass windows. The patent in suit indicated in paragraph [0083] that the titanium oxide film could be obtained most suitably by the pyro-sol method, but also by sputtering, electron beam evaporation, ion plating, chemical vapour deposition (CVD), spraying or dipping. No arguments had been presented so far that suggested that the inventive character of the invention could be seen in the use of the pyro-sol method for obtaining simultaneously the required photocatalytic properties and transparency. Although the pyro-sol method, along with the spraying method, is presented in the patent in suit as the preferred method for forming the titanium

dioxide film, the reasons invoked (paragraphs [0083] and [0084]) rely on the convenience of such methods in an industrial process and are not based on any improvement in terms of properties of the claimed structure that would result from the selection of the pyro-sol method from among the various methods described in the patent in suit. The indication that "*a high-activity titanium dioxide film containing anatase crystals can be obtained in such a way as to be highly uniform and have a large area*" by using the pyro-sol method does not mean that such a film cannot be obtained by using the alternative methods indicated in the patent in suit. Moreover, the use of temperatures in the range of 400 to 550°C in forming the titanium dioxide film has not been indicated to be an exclusive attribute of the pyro-sol method, nor has this range of temperatures been shown to be implied by the use of the pyro-sol method. Accordingly, the mere definition of the pyro-sol method in the patent in suit has not been shown to imply for the skilled reader any advantage that would result from the use of the above range of temperatures. Consequently, until the submissions of the Appellants in their letter dated 1 April 2011, it could not have been expected in view of the preceding submissions and the description of the invention in the patent specification that the gist of the invention could be seen to lie in the use of the pyro-sol method. The upshot is that the amendments introduced shifted the technical focus of the case to a new issue.

5. In addition, to properly assess the inventive step of the claims newly put forward in the light of the prior art, the Board would have needed to have, as explained below, evidence and arguments from the parties on at

least three new issues raised by these claims: firstly the exact meaning attributed by the skilled person to the expression "pyro-sol" in claim 1, which is essential for assessing inventive step; secondly, whether or not the use of the pyro-sol method within the meaning of claim 1 leads to titanium dioxide films that differ structurally from those obtainable by other methods taught in D2; and, thirdly, whether or not the skilled person was aware that a pyro-sol method within the meaning of claim 1 was suitable to prepare a transparent titanium dioxide film having photocatalytic activity.

- 5.1 The closest prior art D2 teaches that a transparent thin film having deodorising properties can be obtained by setting the film thickness of the metal oxide to several microns or thereabouts. Those thin films are obtainable by spray coating, dip coating, spin coating or sputtering (column 4, lines 33-40). Noting that a spray coating method for forming a titanium dioxide film can be based on the same principle as the pyro-sol method described in the patent in suit, namely nebulisation and pyrolysis of a solution containing a precursor of the titanium dioxide, the Board would in particular need to answer whether the pyro-sol method within the meaning of claim 1 and the other methods taught in D2, especially the spray coating, lead to different structures and properties of the titanium dioxide films. Answers to those questions are crucial in order to determine whether the amendment in terms of a product-by-process feature introduced into claim 1 of the Main Request constitutes any change in substance to claim 1 on which the decision of the opposition division was based. The comparison offered by

Appellants between the examples using a pyro-sol method and comparative example 3 of the patent in suit is not suitable to demonstrate any structural feature resulting from the use of the pyro-sol method over the methods used in D2, as comparative example 3 concerns a method using a dispersion of titanium dioxide powder in water leading to a film having little transparency and is therefore not in accordance with D2 that is directed to transparent structures. The Appellants' argument that comparative example 3 of the patent in suit corresponds to the experiment disclosed in column 9, lines 31-35 of D2 is not convincing as the dioxide powder used in this embodiment of D2 is added to a titanium dioxide sol and not to water as in comparative example 3 of the patent.

- 5.2 A further Appellants' argument that the pyro-sol method provides high activity titanium dioxide films containing anatase crystals that can be obtained in such a way as to be highly uniform and have a large area raises the question of whether the use of the pyro-sol method for forming the titanium dioxide film brings about any improvement in terms of uniformity and photocatalytic activity compared to the methods taught in D2, that are also described as providing transparent titanium dioxide films containing anatase crystals and having photocatalytic activity. The Appellants' additional argument that the formation of the films can be achieved at a temperature which is no higher than the softening temperature of glass, namely a temperature in the range of 400 to 550°C, raises the question of whether the terminology "pyro-sol" in the context of titanium dioxide films necessarily implies for the skilled person a temperature in the range of

400 to 550°C, as this temperature range is not defined in claim 1 of the new requests.

5.3 The Appellants argued that none of the cited references referred to a pyro-sol method forming a TiO<sub>2</sub> film containing anatase crystals, whereas Respondents II have argued that document D9 teaches the production of titanium dioxide films by a pyro-sol method, films which in view of the paragraph headed "Results and Discussion" and in view of Figure 4 also appear to contain anatase crystals. The Board would need therefore to assess whether the method for preparing a titanium dioxide film in document D9 is a pyro-sol method within the meaning of amended claim 1 and whether the films disclosed in that document would be considered by the skilled person as providing the required photocatalytic activity.

6. According to the established jurisprudence of the Boards of Appeal, each of the parties to the proceedings bears the burden of proof for the facts it alleges. As the evidence providing an answer to the questions mentioned above was not on file, if the request had been admitted into the proceedings the case would have had to be remitted to the first instance or continued in writing before the Board, to afford each party the necessary opportunity to file such evidence and arguments and to comment on the other parties' submissions. The general rule is that the case should be ready for decision at the time of the oral proceedings before the board, so that late-filed claim requests which raise new issues, as in this case, are only admitted into the proceedings in quite exceptional

- circumstances. In the present case the Board sees no such special circumstances.
7. Accordingly, the late-filed Main and Auxiliary Requests I and II are not admitted into the present appeal proceedings under Article 114(2) EPC in conjunction with Articles 12(4), 13(1) and (3) RPBA.
  8. Article 113(2) EPC stipulates that the instances of the EPO shall examine and decide upon a European patent only in the text submitted to it, or agreed, by the proprietor of the patent. In the present case, the Proprietors agreed only to the text of the patent in suit submitted on 1 April 2011 and at the oral proceedings before the Board as Main, Auxiliary Request I and Auxiliary Request II, respectively. However, those requests were not admitted into the proceedings for the reasons given above.
  9. In the absence of any valid request in the proceedings, the patent in suit must be revoked.



**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar

The Chairman

D. Sauter

J. Riolo