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**Datasheet for the decision  
of 10 March 2011**

**Case Number:** T 1692/07 - 3.3.07

**Application Number:** 97945590.4

**Publication Number:** 0949965

**IPC:** B01J 23/52

**Language of the proceedings:** EN

**Title of invention:**

Improved process for the production of supported palladium-gold catalysts

**Patent Proprietors:**

MILLENNIUM PETROCHEMICALS, INC.

**Opponents:**

Celanese Chemicals Europe GmbH

**Headword:**

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**Relevant legal provisions:**

EPC Art. 123(2)

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

-

**Keyword:**

"Added subject-matter (yes)"

**Decisions cited:**

G 0009/91, T 0201/83

**Catchword:**

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Case Number: T 1692/07 - 3.3.07

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.07  
of 10 March 2011

**Appellants:**  
(Patent Proprietors) MILLENNIUM PETROCHEMICALS, INC.  
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**Representative:** De Hoop, Eric  
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**Respondents:**  
(Opponents) Celanese Chemicals Europe GmbH  
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**Representative:** Ackermann, Joachim  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 25 July 2007  
revoking European patent No. 0949965 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 appeal by the Patent Proprietors (hereafter Appellants) lies from the decision of the opposition division posted on 25 July 2007 revoking European patent No. EP-B-0 949 965 in respect of European patent application No. 97945590.4, which is based on the International application PCT/US1997/019996 filed on 29 October 1997 and published under WO 98/018553. The decision was based on the patent as granted (Main Request) and on 3 sets of claims submitted with letter of 26 April 2007 (Auxiliary Requests 1 to 3).
- II. The Opponents (Respondents) had requested in the notice of opposition the revocation of the patent in its entirety on the grounds of lack of novelty and inventive step (Article 100(a) EPC). The Opposition Division decided that the claimed subject-matter was novel but lacked an inventive step.
- III. With the statement setting out the grounds for appeal dated 4 December 2007, the Main Request and Auxiliary Requests 1 to 3 as considered by the Opposition Division were withdrawn and a new set of nineteen claims, indicated to be a combination of former Auxiliary Requests 1 and 2, was submitted. Claim 1 of new request reads as follows (the deletions made in claim 1 as granted being indicated by the Board in strikethrough and the additions made, in bold and underlined):
- "1. A process for the preparation of a supported palladium-gold catalyst for the vapour phase production of vinyl acetate by the reaction of ethylene, acetic

acid and oxygen, the process comprising impregnating an inert support with palladium and gold salts by treating the inert support with an aqueous solution of the palladium and gold salts and an aqueous solution of an alkali metal compound, which solutions react on the inert support to form the palladium and gold salts, calcining the impregnated support with the palladium and gold salts deposited thereon by heating in a non-reducing atmosphere at a temperature from ~~150~~ 175°C to 350°C to effect decomposition of ~~at least~~ from 10 to 70 percent of the palladium and gold salts and subsequently reducing to the corresponding metals at a temperature of up to 550°C, wherein during reduction the temperature is increased from the calcining temperature up to the maximum temperature at a rate of 0.1°C per minute to 25°C per minute."

Claim 1 as originally filed reading:

"1. In a process for the preparation of a supported palladium-gold catalyst wherein an inert support is impregnated with palladium and gold salts and the salts subsequently reduced to the corresponding metals, to produce catalysts having increased selectivity and activity for the vapor phase production of vinyl acetate by the reaction of ethylene, acetic acid and oxygen, the improvement comprising calcining the impregnated support having the palladium and gold salts deposited thereon by heating in a non-reducing atmosphere at a temperature from about 100°C to about 600°C to effect decomposition of at least 10 percent of the palladium and gold salts before reducing the palladium and gold to the metallic state."

- IV. According to the Appellants' submissions in the statement setting out the grounds for appeal, claim 1 had been amended to a calcination temperature of 175°C to 350°C, this amendment being based "*on page 5, lines 55-57 and claim 1 of the patent as granted*" (sic). The additional amendment defining a decomposition of from 10 to 70 percent of the palladium and gold salts was according to the Appellants based "*on page 5, lines 43-45 and claim 13 of the patent as granted*" (sic). No additional indication concerning the basis in the application as originally filed for the amended set of claims was given.
- V. The Respondents submitted with their letter dated 13 June 2008 that a temperature range between 175 and 350°C for the calcination step in a non-reducing atmosphere was not disclosed in the application as originally filed. The lower limit of 175°C was only disclosed in a specific embodiment on page 12, lines 18-21, in combination with additional features not present in amended claim 1. The amendment made to claim 1 amounted to generalisation of this lower limit which had no basis in the application as originally filed, contrary to the requirements of Article 123(2) EPC.
- VI. In a communication by the Board accompanying the summons to attend oral proceedings, the Board gave a preliminary opinion and drew attention to issues to be discussed at the oral proceedings. *Inter alia*, reasons were given why claim 1 as amended did not appear to meet the requirements of Article 123(2) EPC.

- VII. In reply to the Board's communication, the Appellants announced in their facsimile letter of 19 January 2011 that they would not attend the Oral Proceedings. The letter did not contain any additional comment.
- VIII. The Respondents submitted with a facsimile letter dated 25 February 2011 further comments concerning the issues of amendments and inventive step. According to their submissions the skilled reader of the application as filed would interpret in view of the passage page 12, lines 2-4 and in line with claim 1 the range of decomposition of 10-70% to happen within a temperature interval between 100 and 350°C, whereas the temperature interval between 150 and 275°C was to be associated with a range of decomposition of 30 to 60%.
- IX. Oral proceedings were held on 10 March 2011 in the announced absence of the Appellants. The proceedings were continued in accordance with Rule 115(2) EPC. The Respondents maintained their arguments in support of their objection under Article 123(2) EPC against amended claim 1.
- X. The Appellants had requested in writing that the decision under appeal be set aside and that the patent be maintained on the basis of the set of claims submitted with the statement setting out the grounds of appeal dated 4 December 2007.
- XI. The Respondents requested that the appeal be dismissed.
- XII. At the end of the oral proceedings, the decision of the Board was announced.

## Reasons for the Decision

1. The appeal is admissible.

### *Amendments*

2. In the case of amendments of the claims in the course of opposition appeal proceedings, such amendments are to be fully examined as to their compatibility with the requirements of the EPC, in particular with regard to the provisions of Article 123(2) and (3) EPC (G9/91, OJ 1993, 408, point 19 of the reasons). The test established in the case law in order to determine whether those amendments meet the requirements of Article 123(2) EPC is whether there is a direct and unambiguous disclosure in the original application for what is now claimed (Case Law of the Boards of Appeal of the European Patent Office, 6<sup>th</sup> edition, 2010, III.A.7 and III.A.7.1).
3. Claim 1 as amended in the appeal proceedings defines a process for the preparation of a supported palladium-gold catalyst comprising among others in combination the steps of (i) calcining the Pd and Au salts in a non-reducing atmosphere at a temperature in the range of 175 to 350°C, (ii) decomposing 10 to 70% of the Pd and Au salts and (iii) subsequent reduction to the corresponding metals at a temperature of up to 550°C, (iv) wherein during reduction the temperature is increased from the calcination temperature up to the maximum reduction temperature at a rate of 0.1°C per minute to 25°C per minute.

4. The amendment in claim 1 to the calcination temperature range, which is now comprised between 175 and 350°C, is according to the Appellants based on page 5, lines 55-57 of the patent as granted. The corresponding passage in the application as originally filed is to be found on page 12, lines 18-21, which passage refers to a particular embodiment of the claimed invention, wherein the calcination is carried out at 175°C to 250°C and the resulting calcined product is then reduced while the temperature is "ramped up" from the calcination temperature to about 500°C (*i.e.* a specific reduction temperature) at a rate of from 5°C to 15°C per minute. This passage, however, does not refer to (i) calcination temperatures comprised in a broader range up to 350°C, (iii) a reduction temperature generically defined by the range having 550°C as an upper limit (*vs.* a specific temperature of 500°C for the embodiment cited) and (iv) heating rates from the calcination temperature to the reduction temperature of 0.1°C per minute to 25°C per minute (*vs.* a narrower range of 5°C to 15°C per minute for the embodiment cited). Thus, the passage cited by the Appellants, which does not provide a direct and unambiguous disclosure for a process comprising at least a combination of features (i), (iii) and (iv), cannot provide a proper basis in the application as filed for the subject-matter of amended claim 1. The Appellants did not indicate (nor is the Board itself aware of) any other passage of the application as filed which would disclose a calcination temperature of 175°C.

5. Moreover, according to the established jurisprudence of the boards of appeal (see for example T 201/83, OJ 1984, 481), it is normally not admissible under Article 123(2)



EPC to extract a feature which was originally disclosed only in combination with a set of additional features. A precondition for such kind of amendment is the absence of any clearly recognisable functional or structural relationship among said features. In the present case, however, the conditions for the calcination and reduction steps which are defined on page 12, lines 18-21 of the application as originally filed can be considered to cooperate in order to achieve optimum catalytic activity, as follows from the original disclosure, in particular on page 12, lines 1-13.

6. The Appellants did not file any submissions in response to those objections which were communicated to them in the Board's communication. Therefore, the Board concludes that the application as filed has not been shown to provide a direct and unambiguous disclosure for claim 1 as amended. Consequently, the Appellants' sole request is not allowable, because the subject-matter of claim 1 contravenes the requirements of Article 123(2) EPC.

**Order**

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

1. The appeal is dismissed.

The Registrar

The Chairman

S. Fabiani

J. Riolo