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**Datasheet for the decision  
of 24 April 2008**

**Case Number:** T 0936/04 - 3.3.07

**Application Number:** 95110256.5

**Publication Number:** 0689872

**IPC:** B01J 37/16

**Language of the proceedings:** EN

**Title of invention:**

Pd and Ag containing catalyst for the selective hydrogenation  
of acetylene

**Patent Proprietors:**

ConocoPhillips Company

**Opponents:**

- 01) BASF SE  
02) KataLeuna GmbH Catalysts

**Headword:**

Double patenting/CONOCO

**Relevant legal provisions:**

EPC Art. 111, 123(2)  
EPC R. 80

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

-

**Keyword:**

"Double patenting (no)"  
"Amendments - allowable (yes)"  
"Remittal - (yes)"

**Decisions cited:**

G 0001/05, G 0001/06, T 0058/86, T 0133/92, T 0441/92,  
T 0307/03

**Catchword:**

(1) Double patenting is not a ground of opposition. It is within the discretion of the instances of the EPO to raise the objection in opposition or opposition appeal proceedings against proposed amended claims, but this should be done only in clear cases. The purpose behind the principle of prohibition of double patenting is to avoid unnecessary duplication of effort, and not to impose on the instances of the EPO an obligation to make a complex comparison between the case before them and the claims that may have been granted in some other proceedings (see Reasons section 2 on double patenting, in particular Point 2.3).

(2) Where at the time of the decision by the opposition division no patent had yet been granted on the divisional application, then for this reason alone the opposition division was correct to disregard the objections of double patenting raised before it. At that stage it would be only a matter for the Examining Division, in the proceedings on the divisional application before it, to avoid double patenting by allowing again claims already granted in the parent patent (see Reasons, Point 2.2).



Case Number: T 0936/04 - 3.3.07

**DECISION**  
of the Technical Board of Appeal 3.3.07  
of 24 April 2008

**Appellants:**  
(Opponents 01)

BASF SE  
D-67056 Ludwigshafen (DE)

**Respondents:**  
(Patent Proprietors)

ConocoPhillips Company  
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**Further party:**  
(Opponents 02)

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Gleiss Grosse Schrell & Partner  
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**Decision under appeal:**

Interlocutory decision of the Opposition  
Division of the European Patent Office posted  
17 May 2004 concerning maintenance of European  
patent No. 0689872 in amended form.

**Composition of the Board:**

**Chairman:** S. Perryman  
**Members:** G. Santavicca  
F. Rousseau

## Summary of Facts and Submissions

- I. The appeal by opponents 01 (hereinafter "the appellants") lies from the interlocutory decision of the Opposition Division of 17 May 2004 maintaining the patent in suit, European patent 0 689 872, in an amended form.
- II. The patent was granted on application N° 95 110 256.5 (hereinafter "the parent application") with four claims reading as follows:
- "1. A process for selectively hydrogenating acetylene with hydrogen gas to ethylene, characterized in that the process is carried out in the presence of a catalyst composition, containing
    - a) palladium,
    - b) silver,
    - c) at least one alkali metal, and
    - d) a solid support material.
  2. The process of claim 1, wherein said acetylene is present as an impurity in an ethylene stream, at a level of 1 - 50.000 ppm C<sub>2</sub>H<sub>2</sub>.
  3. The process of claims 1 or 2 being carried out at a reaction temperature of 0 - 150°C."
  4. The process of one of claims 1 to 3, where the catalyst composition contains silver and palladium in a weight ratio of 2.8:1 to 8:1."

III. The patent was opposed on the grounds that the claimed subject-matter lacked novelty and an inventive step (Article 100(a) EPC) having regard *inter alia* to the following documents:

D3: EP-A-0 064 301;

D4: EP-A-0 686 615;

D5: US-A-2 802 889 (in combination with extracts from the Römpp's Chemical Dictionary concerning the definition of *inter alia* diatomaceous earth);

D6: DE-A-3 312 252

D6a: EP-A-0 124 744 (equivalent to document D6)

D12: EP-A-0 0 653 243;

D13: Part of the brochure "Low surface area catalyst carriers" from United Catalysts Inc (June 1991);

D16: Part of the Brochure "Otto Wärme- und Katalysatorträger" from Dr. C. Otto GmbH (1976).

IV. The Opposition Division refused the Main Request before it, the claims as granted, as their subject-matter was objectionable for extending beyond the application as filed and lacking novelty, but considered that Auxiliary Request 1 filed at the oral proceedings before it met the requirements of the EPC. The only amendments to the claims as granted in Auxiliary Request 1 were the introduction of the words "wet-reduced" in the phrase "in the presence of a catalyst composition" in the introduction of Claim 1 as granted, and the insertion of the words "in a skin-type catalyst which" after the word "composition" in Claim 4. Their reasoning can be summarised as follows:

(a) The new ground of opposition of extended subject-matter, though invoked late, was of sufficient importance to be introduced by the Opposition

Division under its discretionary power to do so. As the "wet-reducing" feature was originally present in Claim 1 as filed, and appeared from the description to be essential to solve the problem, not having this feature in Claim 1 as granted was an unallowable extension of subject-matter.

- (b) The process of Claim 1 according to the Main Request was not novel having regard to the art disclosed in any of D3, D4, D5 and D12. All these documents disclosed a process for selectively hydrogenating acetylene with hydrogen gas to ethylene in the presence of a catalyst containing Pd, Ag and as a solid support material alumina (D3, D4, D12) or diatomaceous earth (D5). It was generally known (Römpf's Chemical Dictionary and D13 to D16) that those support materials also contained alkali metals, at least as impurities.
- (c) The introduction of the feature "wet-reduced" in Claim 1 of Auxiliary Request 1 had a basis in the application as filed. Likewise the amendment of Claim 4 removed an objection of extended subject-matter.
- (d) The objection that "wet-reducing" was the subject of a divisional application, so that the claims so amended should not be allowed into the proceedings, based on decisions T 58/86 and T 441/92 (both not published in the OJ EPO) failed because the divisional application was still pending, and double patenting could easily be avoided by amending the subject-matter claimed in the divisional application.

- (e) It was credible that "wet-reducing" implied a different structure to the prior art "dry-reducing", and on this basis novelty could be acknowledged over D3, D5 and D6a. Runs 4 and 5 in the patent in suit showed that a catalyst which had also been wet-reduced showed a broader window between clean up and runaway temperatures ( $T_2-T_1$ ), whereas the opponents had not proven that the feature "wet-reduced" had no consequential effect.
- (f) Document D1 (EP-A-0 382 588), submitted by opponents 01 during the oral proceedings, had been used in the examination phase of the application and thus was known to the parties. D1 disclosed a "wet-reduction" process and was so relevant that it should be admitted into the proceedings.
- (g) As to inventive step, the closest prior art was indisputably the acetylene selective hydrogenation process disclosed in D3, in which a catalyst comprising Pd, Ag and an (alkali containing) alumina was used, in order to improve the clean up runaway temperature window (" $T_2-T_1$  window"). The process of Claim 1 differed from that of D3 in that the catalyst had been wet-reduced. The problem to be solved thereby was a further improvement of the  $T_2-T_1$  window in an acetylene selective hydrogenation process. The multitude of examples in the patent in suit showed a considerable improvement of that window when a wet-reduced catalyst was used. Thus, the problem had been solved. D1 addressed a different problem (providing refiners with a pre-reduced catalyst to

avoid the drawbacks of manipulating hazardous reducing agents in refineries), concerned different catalytic hydrotreatments, and was silent on the temperature window, let alone on improving it, and thus would not suggest to the skilled person modification of the process of D3 by using a wet-reduced catalyst. Therefore, the claimed subject-matter was not obvious.

V. The appellants filed a notice of appeal and paid the appeal fee on 27 July 2004. In the grounds of appeal, received on 24 September 2004, the appellants enclosed a copy of a new document, namely D17 (EP-A1-0 303 525). With letter dated 25 May 2005, the appellants submitted a further document, namely the specification of patent N° 1 110 606, ("the patent on the divisional application") granted on divisional application EP 01100090 to the application on which the present (parent) patent was granted.

VI. Mention of grant of the patent on the divisional application appeared on 11 May 2005 in Bulletin 2005/19. No opposition was filed. As granted it contained inter alia Claims 1, 3, 5, 12 and 13 reading as follows:

"1. A method of preparing a Pd and Ag containing composition, the method comprising the step of contacting a solid composition comprising palladium, silver, and an inorganic support material with a liquid composition comprising at least one reducing agent and at least one dissolved compound of at least one alkali metal at a temperature of up to 60° at contacting conditions which are effective in enhancing the



selectivity to ethylene of said solid composition when employed as a catalyst for hydrogenating acetylene to ethylene, wherein said contacting is carried out at such conditions as to incorporate 0.05 -5 weight-% alkali metal into said solid composition.

3. The method of claim 1 or 2, wherein said inorganic support material is selected from alumina, titania, zirconia and mixtures thereof.
  5. The method of claim 3, wherein said inorganic support is alpha-alumina, and said solid composition contains 0.01-1 weight percent palladium and 0.01-10 weight percent silver, preferably 0.01-0.2 weight percent palladium and 0.02-2 weight percent silver, respectively.
  12. A composition obtainable by a method according to any of claims 1 to 11.
  13. A process for selectively hydrogenating acetylene with hydrogen gas to ethylene in the presence of the composition of claim 12."
- VII. The patent proprietors (hereinafter, the respondents) responded to the grounds of appeal and to the letter dated 25 May 2005.
- VIII. The Board sent a communication accompanying the summons, dated 12 February 2008, to oral proceedings, raising *inter alia* concerns whether the addition to Claim 1 as granted of "wet-reduced" might not be a generalization of the actual disclosure, and whether this term was

sufficient to distinguish the so produced catalyst from ones not so produced.

- IX. In response, by letter dated 25 March 2008, the respondents submitted further sets of amended claims identified as Auxiliary Requests 2 to 4 as well as an Experimental Report, aimed at showing the effect of time and temperature on the preparation of wet-reduced catalysts.

Opponents 02 (party as of right pursuant to Article 107 EPC, second sentence) announced, by letter dated 31 March 2008, that they would not attend the oral proceedings.

The appellants announced that they would not be attending the scheduled oral proceedings and requested a decision on the state of the file (letter dated 9 April 2008).

- X. By a communication dated 14 April 2004, the Board informed the parties that the fixed oral proceedings were maintained.

- XI. Oral proceedings duly took place on 24 April 2008, at which the respondents submitted a new Main Request comprising 3 claims, which read as follows (the additional features to the claims as granted are emphasized in bold by the Board):

"1. A process for selectively hydrogenating acetylene with hydrogen gas to ethylene, characterized in that **a catalyst composition is prepared by contacting a supported palladium- and silver-containing base**

**catalyst composition with a liquid composition containing at least one reducing agent which is effective at a temperature of up to 60°C, and at least one alkali metal compound, and the hydrogenation process is carried out in the presence of the above catalyst composition, containing**

- (a) palladium,
- (b) silver,
- (c) at least one alkali metal, and
- (d) an **inorganic** solid support material,

**wherein the base catalyst composition is a skin-type catalyst which contains 0.01 to 1 weight-% palladium and 0.01 to 10 weight-% silver at a Ag:Pd weight ratio of 1:1 to 10:1."**

"2. The **hydrogenation** process of claim 1, wherein said acetylene is present as an impurity in an ethylene stream, at a level of 1 - 50.000 ppm C<sub>2</sub>H<sub>2</sub>."

"3. The **hydrogenation** process of claims 1 or 2 being carried out at a reaction temperature of 0 - 150°C."

XII. The arguments submitted by the appellants in writing, as far as they are applicable to the new Main Request, can be summarised as follows:

*Double patenting*

- (a) The proprietors had amended the claims only during the oral proceedings before the opposition division by insertion of the feature "wet-reduced". That feature, however, belonged to the subject-matter defined in the claims of then pending divisional

application. This was objectionable double patenting.

- (b) The amendment to Claim 1 as granted during the oral proceedings before the Opposition Division thus raised a number of legal questions, such as:
  - (i) whether there was any legitimate interest at filing claims with subject-matter (here, wet reduction), which had been divided out in a divisional application, e.g. to overcome a lack of unity objection;
  - (ii) whether the Opposition Division could decide that a claim in a patent in suit, having the same scope as a claim in a still pending divisional application, fulfilled the requirements of the EPC, without overriding the competence of the Examining Division responsible for the then pending divisional application who had already expressed a different view on the patentability of the same subject-matter;
  - (iii) whether the state of the art searched for the divisional application had to be considered also in the opposition proceedings and, if yes, why the burden of this should be on the opponents;
  - (iv) whether there could be a loss of the right to oppose the divisional patent, if the claim of the divisional application having

essentially the same content as that of amended Claim 1 was deleted.

- (c) In view of the foregoing, particularly because it disregarded the Guidelines for the Examination in the EPO (C.VI.9.6 was referred to) and it contradicted the position taken by the competent Examining Division, the decision to admit the late filed claims in the opposition proceedings was legally incorrect.
- (d) Although the Board was only bound by the EPC and not by the Guidelines (*supra*), the question whether in opposition proceedings a patent proprietor could reinstate in the claims of an opposed parent patent subject-matter already divided out in a divisional application was not dealt with in the EPC. As regards the case law, it only dealt with situations where application and divisional application were confronted. Thus, the Board should answer the question whether in opposition proceedings it was permissible to reinstate, in a parent patent, subject-matter divided out in a divisional application to overcome a non unity objection.
- (e) In the present case, if the reinstatement in the claims of the opposed parent patent of the feature of the wet-reduction, which made up the definition of the subject-matter claimed in a divisional application, was non admissible, then the claims comprising that amendment should be rejected as being inadmissible in the appeal proceedings.

XIII. The arguments of the respondents can be summarised as follows:

*Double patenting*

- (a) Since opponents 02 had sought to introduce the fresh ground of opposition under Article 100(c) EPC only less than three weeks before the oral proceedings held on 5 May 2004 in opposition proceedings, and since that fresh ground was introduced by the opposition division at the oral proceedings, the amended claims by the patent proprietors, to overcome that new ground, could not have been filed before the oral proceedings. Hence, the amendments were not late filed.
- (b) The feature introduced ("wet-reduced") was essential to meet an objection raised by the opposition division concerning extension of the subject-matter beyond that as filed. Both the parent and the divisional had to have this feature, and there was no question of overriding the competence of the Examining Division on the still pending divisional application.
- (c) The parent and the divisional patents were directed to different subject-matters, so that a comparison was not possible, and no question of double patenting arose.
- (d) As regards the claims of the new Main Request, they were based on the application as filed and no longer contained the expression "wet-reduced" queried by the Board. In particular, Claim 1 only

specified process steps, including the preparation steps of the catalyst, which had very little Pd content, compared to e.g. the catalyst disclosed in D4, and performed differently from the catalysts known from D17 and D3, so that a further broadening of the  $T_2$ - $T_1$  window could be obtained.

- (e) As regards inventive step, D3 described the closest prior art. However, the disclosure of D3 that the ratio between Ag and Pd on the catalyst should at least be of 2 for the catalyst to be suitable to broaden the  $T_2$ - $T_1$  window did not apply to the claimed process, which achieved the effect even if a catalyst with a Ag:Pd ratio of 1:1 were used. This could be shown by further tests, still to be carried out and submitted by the respondents, if the opportunity were given to the respondents, e.g. by way of remittal of the case to the first instance. A remittal would also give the opportunity to the appellants to take a stance on the new Main Request, if they so wished.

XIV. The appellants (opponents 01) had requested in writing that the decision under appeal be set aside and that the European patent be revoked.

XV. The respondents (patent proprietors) requested that the decision under appeal be set aside and the case be remitted to the first instance for further prosecution on the basis of the new Main Request submitted at the oral proceedings on 24 April 2008.

## Reasons for the Decision

1. The appeal is admissible.
2. *Double patenting*
  - 2.1 Enlarged Board of Appeal decisions G 1/05 and G 1/06 (OJ EPO 2008, 271 and 307 respectively) in point 13.4 acknowledge the existence of the principle of prohibition of double patenting, namely that an applicant has no legitimate interest in proceedings leading to the grant of a second patent for the same subject-matter if he already possesses one granted patent therefor. This Board has applied this principle to refuse a (divisional) application in decision T 307/03 of 3 July 2007 (to be published in the OJ EPO) on the basis of requests which involved double patenting over claims already granted in a patent which had issued on the parent application in that case.
  - 2.2 The present case however concerns the patent granted on the parent application. At the time of the decision by the opposition division no patent had yet been granted on the divisional application. For this reason alone the opposition division was correct to disregard the objections of double patenting raised before it: at that stage it would be only a matter for the Examining Division, in the proceedings on the divisional application before it, to avoid double patenting by allowing again claims already granted in the parent patent.
  - 2.3 Double patenting is not a ground of opposition. It is within the discretion of the instances of the EPO to



raise the objection in opposition or opposition appeal proceedings against proposed amended claims, but this should be done only in clear cases. The purpose behind the principle of prohibition of double patenting is to avoid unnecessary duplication of effort, and not to impose on the instances of the EPO an obligation to make a complex comparison between the case before them and the claims that may have been granted in some other proceedings.

- 2.4 Even considering for the divisional patent (see point VI above) the case of process Claim 13 using a composition of Claim 12 when made in accordance with Claims 5, 3 and 1, the result is not the same, or even substantially the same as Claim 1 of the Main Request. The Board sees no occasion to raise a double patenting objection here.

### *Main Request*

#### 3. *Amendments*

- 3.1 Compared to Claim 1 as granted, Claim 1 according to the Main Request contains a number of amendments (point IX, *supra*). The amendments and their respective basis in the application as filed are as follows:

- 3.1.1 The amendment "a catalyst composition is prepared by contacting a supported palladium- and silver-containing base catalyst composition with a liquid composition containing at least one reducing agent which is effective at a temperature of up to 60°C, and at least one alkali metal compound", in combination with the amendment "an inorganic solid support material", is

based on the definition of Claim 11 as filed, which refers to Claim 10 as filed, which refers to Claim 1 as filed, and in addition to the disclosure of the paragraph bridging pages 2 and 3 of the application as filed. Claim 1 and that paragraph also comprise the further following passage "at contacting conditions which are effective in enhancing the selectivity of said solid catalyst composition when employed as a catalyst for hydrogenating acetylene to ethylene", which has not been included in Claim 1. The non-inclusion in Claim 1 of that further passage is justified by the fact that it merely states a desideratum. In fact, the further passage neither defines the contacting conditions nor any reference thereto to establish any sought-for enhancement.

3.1.2 The amendment "and the hydrogenation process is carried out in the presence of the above catalyst composition" represents the object of the application as filed, as defined in the first paragraph of the "summary of the invention", and is described, exemplified and claimed in the application as filed (Claims 11 + 10 + 1).

3.1.3 The amendment "wherein the base catalyst composition is a skin-type catalyst which contains 0.01 to 1 weight-% palladium and 0.01 to 10 weight-% silver at a Ag:Pd weight ratio of 1:1 to 10:1." is based on the passage of page 4, lines 17 to 20, of the application as filed. Although that passage begins with the article "this", giving the impression that it only refers to a palladium/silver/alumina composition, the passage on page 4, lines 13 to 15, clearly mentions that inorganic support materials other than alumina, such as titania, zirconia and mixtures with alumina are also encompassed.

As a matter of fact, Example VII of the application as filed deals with inorganic supports other than alumina. Concerning the limitation "skin-type", it applies to all of the catalysts having any inorganic supports used for hydrogenating acetylene to ethylene, as is apparent from the fact that the definition in Claim 3 as filed, which concerns the most preferred catalyst mentioned on page 4, line 17, omits that particular. Questioned on this point, the respondents have confirmed that also the catalysts of Example VII of the application as filed are skin-type.

- 3.1.4 The combination of all of those amendments thus finds its basis in of the application as filed, in particular in the claims and in the examples.
- 3.2 Dependent Claims 2 and 3 of the main Request, compared to Claims as granted merely include, respectively, the amendment "The **hydrogenation** process of claim 1" and "The **hydrogenation** process of claims 1 or 2", which becomes necessary in view of the fact that Claim 1 includes the preparation steps as well as the hydrogenation process.
- 3.3 Consequently, the amendments fulfil the requirements of Article 123(2) EPC.
- 3.4 The amendments not only have a basis in the application as filed but also restrict the protection conferred (Article 123(3) EPC). As a case in point, the amounts of Pd and Ag used are now defined.

3.5 The amendments aim at overcoming grounds of opposition and objections raised by the Board in the communication in preparation for the oral proceedings, such as:

(a) the lack of basis of the expression "wet-reduced", which allegedly constitutes a generalization of the wet reduction steps defined in Claims 11+10+1 and in the paragraph bridging pages 2 and 3 of the application as filed;

(b) the lack of novelty over the hydrogenation process disclosed by D4, because the feature "wet-reduced" as such is not suitable to impart measurable distinguishing structural features to the catalyst compared to a catalyst reduced conventionally as well as because no ratio Pd:Ag was specified in Claim 1.

Thus, the amendments also fulfil the requirements of Rule 80 EPC 2000.

3.6 As regards the question of the non-appearance of the appellants at oral proceedings and their right to be heard on the amended claims, the decision of the Board on the new Main Request is in line with the case law of the Boards of Appeal of the EPO (5th edition 2006, VI.B.3.1, in particular T 133/92 mentioned therein).

3.7 The Main Request is thus formally allowable.

4. *Novelty*

4.1 In the decision under appeal, the subject-matter of Claim 1 was found to be novel over that disclosed by any of D3, D5 and D6a.

4.2 In their statement setting out the grounds of appeal, the appellants have not contested the decision on this point. Nor have they ever contested that the claimed process is novel over that disclosed by D17.

4.3 Considering that the scope of the present claims is narrower than that of the claims underlying the decision under appeal, the Board, also having regard to D4, has no reason to take a different position on the issue of novelty.

5. *Inventive step*

5.1 The respondents still consider that document D3 describes the closest prior art. A passage of D3 states that a particular minimum value for the ratio Ag:Pd is necessary in order to influence the latitude of the  $T_2-T_1$  window. According to the Board, this passage could influence the decision whether or not the problem underlying the alleged invention (e.g. to broaden the  $T_2-T_1$  window) is effectively solved by a process using a catalyst as prepared according to Claim 1. However, the minimum value mentioned in that passage of D3 is contested by the respondents, who have argued that the  $T_2-T_1$  window can be broadened even in cases where a catalyst having a Ag:Pd ratio of 1:1 is used and that they might be able to prove it, if more time was available. They thus have requested remittal of the

case to the first instance, to have the opportunity of presenting the announced additional test reports.

6. *Remittal*

6.1 The new Main Request represents a new situation, i.e. one which goes beyond the review of the decision under appeal by the Board.

6.2 In order to safeguard the proper consideration of the issues, the Board thus decides to exercise its discretion pursuant to Article 111(1) EPC, second sentence, and to remit the case for further prosecution.

**Order**

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

1. The decision under appeal is set aside.
2. The case is remitted to the first instance for further prosecution on the basis of the new Main Request submitted at oral proceedings on 24 April 2008.

The Registrar:

The Chairman:

C. Eickhoff

S. Perryman