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**Datasheet for the decision
of 26 June 2008**

Case Number: T 0772/06 - 3.3.03

Application Number: 95940814.7

Publication Number: 0793678

IPC: C08F 10/00

Language of the proceedings: EN

Title of invention:

Method for making supported catalyst systems, and catalyst systems therefrom

Patentee:

ExxonMobil Chemical Patents Inc., et al

Opponent:

THE DOW CHEMICAL COMPANY

Headword:

-

Relevant legal provisions:

EPC Art. 54, 111(2), 123(2), 123(3)

EPC R. 115(2)

RPBA Art. 15(3)

Relevant legal provisions (EPC 1973):

-

Keyword:

"Main request - novelty (yes)"

Decisions cited:

T 0206/83, T 0396/01, T 1018/02

Catchword:

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Case Number: T 0772/06 - 3.3.03

D E C I S I O N
of the Technical Board of Appeal 3.3.03
of 26 June 2008

Appellant I:
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Appellant II:
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office dated
7 December 2005 and posted 27 March 2006
concerning maintenance of European patent
No. 0793678 in amended form.

Composition of the Board:

Chairman: R. Young
Members: C. Idez
C. Brandt

Summary of Facts and Submissions

- I. The grant of European patent No. 0 793 678 in the name of Exxon Chemical Patents Inc. (later ExxonMobil Chemical Patents Inc.) in respect of European patent application No. 95 940 814.7 filed on 22 November 1995 and claiming priority of the US patent application No. 344837 filed on 23 November 1994 was announced on 29 September 1999 (Bulletin 1999/39) on the basis of 6 claims.

Claim 1 read as follows:

"A method for producing a supported metallocene catalyst system, said method comprising:

- a) forming a spray from a volume of metallocene catalyst solution in a solvent; and
- b) contacting the spray with a porous support material, wherein the volume of catalyst solution is less than 4 times the total pore volume of the porous support material."

Claims 2 to 6 were dependent claims.

- II. On 29 June 2000, a Notice of Opposition against the patent was filed by The Dow Chemical Company. The Opponent requested revocation of the patent in its entirety on the grounds of lack of novelty and lack of inventive step (Art. 100(a) EPC).

The opposition was supported, *inter alia*, by the following documents:

D1: W0-A-96 00245;

D2: WO-A-96 02583; and

D3: WO-A-94 14855.

III. In an interlocutory decision announced orally on 7 December 2005 and issued in writing on 27 March 2006 the Opposition Division held that the grounds of opposition did not prejudice the maintenance of the patent in amended form.

The decision of the Opposition Division was based on Claims 1 to 6 as main request as submitted with the letter dated 11 April 2001, and on Claims 1 to 6 submitted as first auxiliary request during the oral proceedings of 7 December 2005.

Claim 1 of the main request read as follows:

"A method for producing a supported metallocene catalyst system, said method comprising:

- a) forming a spray from a volume of metallocene catalyst solution in a solvent; and
- b) contacting the spray with a porous support material, wherein the volume of catalyst solution is less than 4 times the total pore volume of the porous support material and the porous material is an inorganic oxide material."

Claim 1 of the first auxiliary request read as follows:

"A method for producing a supported metallocene catalyst system, said method comprising:

- a) forming a spray from a volume of metallocene catalyst solution in a solvent; and
- b) contacting the spray with a porous support material, wherein the volume of catalyst solution is less than

4 times the total pore volume of the porous support material and the contact occurs in a rotating batch blender, a double-cone blender, a vertical conical dryer, a horizontal mixer or a standard fluidized bed."

Claims 2 to 6 of both requests corresponded to Claims 2 to 6 as granted.

According to the decision, Claim 1 of the main request was considered as meeting the requirements of Articles 123(2) and 123(3) EPC, but as lacking novelty in view of document D1.

Concerning the first auxiliary request, it was considered as meeting the requirements of Articles 123(2) and 123(3) EPC.

The subject-matter of Claim 1 was considered as novel, since none of the documents of the prior art cited clearly disclosed the use of at least one of the blenders cited in Claim 1 in order to prepare a supported catalyst. In particular, the Opposition Division did not consider document D2 as novelty destroying because the loop reactor disclosed therein (used to prepare the supported catalyst) could not be assimilated as a fluidized bed. Furthermore, D2 did not unambiguously mention the ratio of catalyst solution and pore volume of the support as disclosed in Claim 1. Concerning inventive step, it was considered that the technical problem was seen in the preparation of supported metallocene catalyst with an even distribution of that catalyst onto the support. The fact that the catalyst could be used to provide reduced fouling during a polymerization process of the reactor was however considered only as a bonus effect.

Document D3 was taken as closest prior art document. The claimed invention was distinguished therefrom by the kind of the blenders chosen to contact the catalyst solution to the support, in order to lead to the same effect.

Since neither D3 and nor any other document of the cited prior art gave any hint that the blenders and mixers as recited in Claim 1 should lead to such an even distribution of a metallocene onto a porous support as disclosed in the patent, the claimed subject-matter was considered as involving an inventive step.

IV. Notices of Appeal were filed on 22 May 2006 by the Patent Proprietor (Appellant I), and on 2 June 2006 by the Opponent (Appellant II), respectively. The prescribed fees were paid on the same day, respectively.

V. With its Statement of Grounds of Appeal filed on 27 July 2006, Appellant I submitted two sets of claims representing its main request and its first auxiliary request.

The main request corresponded to the main request considered by the Opposition Division in its decision, and the first auxiliary request corresponded to the first auxiliary request during opposition proceedings.

Appellant I also presented arguments concerning the novelty of the subject-matter of its main request, which may be summarized as follows:

(i) The Opponent had alleged that Claim 1 lacked novelty over D1 and D3 because the word "spray" in the

patent in suit was such that the embodiments of Methods 2 and 3 of D1 and Example 1 of D3 fell within the claim.

(ii) According to the Opposition Division the term "spray" was vaguely defined and rendered the claim very broad, and therefore encompassed Methods 2 and 3 of D1.

(iii) It was common ground between the Parties that Methods 2 and 3 of D1 disclosed the dropwise addition of a solution comprising alumoxane and a metallocene catalyst onto a porous support.

(iv) The skilled reader of the patent in suit would understand that the word "spray" as used in Claim 1 did not encompass such dropwise addition.

(v) Reference was made in that respect to paragraphs [0004],[0034],[0035] and [0037] of the patent in suit.

(vi) While the word "dropwise" did appear in paragraph [0047] of the patent in suit, that sentence was simply describing the capabilities of the apparatus of Fig 2, and did not state or imply that dropwise addition was within the scope of the invention.

(vii) D3 did not disclose that the metallocene/alumoxane solution was sprayed onto the support.

(viii) Thus, novelty was given over D1 and D3.

VI. In its Statement of Grounds of Appeal submitted on 7 August 2006, Appellant II maintained that Claim 1 of the main request was not novel over document D1.

VII. With its letter dated 8 December 2006, Appellant I filed a second, a third and a fourth auxiliary request. The second auxiliary request corresponded to the request on which the Opposition Division had decided to maintain the patent.

VIII. In its letter dated 22 January 2007, Appellant II argued essentially as follows, concerning the novelty of the main request:

(i) The definition of the term "spray" in the patent in suit was very broad.

(ii) Reference was made in that respect to paragraphs [0035], [0047] and [0048] of the patent in suit.

(iii) Thus, the term "spray" as used in Claim 1 covered other forms than only sprays as the skilled person would understand them. In particular, in view of paragraph [0035] it would also encompass "a fine liquid stream" or "a gas" and in view of paragraph [0047] a dropwise addition.

(iv) Furthermore, besides being extremely broad, the term was unclear and could not be used to distinguish the invention from the prior art.

(v) Thus, D1 and D3 (Example 1) anticipated the subject-matter of Claim 1 of the main request.

IX. With its letter dated 4 May 2007, Appellant I submitted *inter alia* the following document:

D16: The Kirk-Othmer Encyclopaedia of Chemical Technology, third edition, Volume 21, title pages and page 466 (1983).

It also argued essentially as follows:

The common element of the definitions of "spray" given in document D16 and in paragraph [0035] of the patent in suit was that a spray must include a multitude or a collection of droplets. Thus, the skilled person would immediately realise that the dropwise addition described in D1, the whole point of which was to emphasise the addition of liquid in individual drops, was not encompassed by the definition of the word "spray".

- X. With its letter dated 2 May 2008, Appellant I submitted three new auxiliary requests representing its fourth, sixth and seventh auxiliary requests. It indicated that the fourth auxiliary request submitted with letter dated 8 December 2006 had been made its fifth auxiliary request.
- XI. With its letter dated 23 May 2008, Appellant II informed the Board that it would not attend the oral proceedings scheduled to take place on 26 June 2008 before the Board.
- XII. With its letter dated 12 June 2008, Appellant I further submitted 8 auxiliary requests, representing its eighth to fifteenth auxiliary request.
- XIII. Oral proceedings were held before the Board on 26 June 2008 in the absence of Appellant II.

At the oral proceedings, the discussion essentially focussed on the question of novelty of the subject-matter of the main request in view of documents D1 and D3. Although essentially relying on the arguments presented in that respect in the course the written appeal proceedings, Appellant I made additional submissions which may be summarized as follows:

(i) Document D16 represented common technical knowledge.

(ii) It was clear that the definition of the term "spray" given in D16 would not encompass a "dropwise" addition, i.e. a drop by drop addition.

(iii) There was no contradiction between the definition given in D16 and paragraph [0035] of the patent in suit, which defined the spray as a collection of small droplets. The reference to a "gas" in that paragraph should be interpreted as referring to the "gas" which was part of the spray.

(iv) Concerning paragraph [0047] of the patent in suit, the reference to a "dropwise" addition should be seen in the context of original Claim 7, which related to a method of preparation of the catalyst by using a conical dryer, but which contained no specific reference to a spray of the catalyst solution.

(v) Paragraph [0047] referred to several ways of applying the catalyst solution, i.e., dropwise, as a stream directly, by using a dip tube or more preferably by using a spray nozzle.

(vi) It was further clear from paragraph [0004] of the patent in suit that a dropwise addition was not part of the present invention.

(vii) There might have some unclarity due to a lack of adaptation of the description to the claims as granted which no longer contained a claim corresponding to independent Claim 7 as originally filed. Lack of clarity was not a ground of opposition.

(viii) Following observations of the Board concerning Examples 3 and 4 of the patent in suit which referred to the use of a dip tube, Appellant I submitted that it was not possible to ascertain whether in these examples the catalyst solution was indeed sprayed. The Appellant further indicated that it would be prepared to delete these examples.

(ix) Concerning D1 and D3, it submitted that in Methods 2 and 3 of D1, the catalyst solution was added dropwise, and that in Example 1 of D3 it was not specified how the catalyst solution had been applied to the inorganic support.

XIV. Appellant I (patentee) requests that the decision under appeal be set aside and that the case be remitted back to the first instance for assessment of inventive step on the basis of the main request as filed with the Statement of Grounds of Appeal, or in the alternative on the basis of first auxiliary request as filed with the Statement of Grounds of Appeal. As a second auxiliary request Appellant I requests that the patent be maintained in the form allowed by the Opposition Division,

Appellant I further requests that the decision under appeal be set aside, and that the case be remitted back to the first instance for assessment of inventive step on the basis of the third auxiliary request as filed with the letter of 8 December 2006, of the fourth auxiliary request as filed with letter dated 2 May 2008, of the fifth auxiliary request corresponding to the fourth auxiliary request as filed with the letter of 8 December 2006, of the sixth auxiliary request or the seventh auxiliary request both filed with letter dated 2 May 2008, or on the basis of one of the auxiliary requests 8 to 15 as submitted with letter dated 12 June 2008.

According to its written submissions, Appellant II (opponent) requests that the decision under appeal be set aside and the patent be revoked.

Reasons for the Decision

1. The appeals are admissible.
2. *Procedural matters*
 - 2.1 *Absence of Appellant II at the oral proceedings before the Board*
 - 2.1.1 As mentioned in Sections XI and XIII above, Appellant II informed the Board with its letter dated 23 May 2008 that it would not attend the oral proceedings scheduled to take place on 26 June 2008 and the oral proceedings took place in its absence.

2.1.2 In accordance with Rule 115(2) EPC, the proceedings were continued without Appellant II who had been duly summoned to the oral proceedings. It further follows, that, in accordance with Article 15(3) of the Rules of Procedure of the Boards of Appeal, the Board considers that the absent party relied only on its written submissions.

2.2 *Late filed document*

2.2.1 The textbook excerpt D16 has been submitted by Appellant I with its letter dated 4 May 2007. Its content is considered to relate to common general knowledge and cannot be considered to go beyond the factual framework of the case hitherto, since that framework also includes such common general knowledge.

2.2.2 Taking furthermore into account that this document has been submitted more than one year before the oral proceedings before the Board, and that Appellant II has hence had ample time and opportunity to comment on that document, the Board sees no reason for excluding D16 from consideration.

Main request

3. *Article 123(2) and 123(3) EPC*

3.1 Claim 1 of the main request differs from Claim 1 as granted only in that it has been indicated that the porous material is an inorganic oxide.

3.2 This claim has been considered as meeting the requirements of Article 123(2) and (3) by the

Opposition Division. The Board sees no reason to depart from that view. Nor was the finding of the Opposition Division in this respect challenged by Appellant II.

4. *Interpretation of Claim 1*

4.1 The method according to Claim 1 requires the steps of

a) forming a spray from a volume of metallocene catalyst solution in a solvent; and of

b) contacting the spray with a porous support material, wherein the volume of catalyst solution is less than 4 times the total pore volume of the porous support material.

4.2 It is hence evident from the wording of Claim 1 that the technical meaning, which the skilled person would give to the term "spray", is crucial to the definition of subject-matter of Claim 1.

4.3 In this connection, the Board firstly notes that it has never been challenged by Appellant II that the term "spray" as such has an ordinary technical meaning for the skilled person.

4.4 This implies, in the Board's view, that such ordinary meaning would be part of common general knowledge of the skilled person.

4.5 In that respect, it is normally accepted that common general knowledge is represented by basic handbooks and textbooks on the subject in question (cf. T 206/83, OJ EPO 1987, 5, Reasons point 5).

- 4.6 Consequently, the Board sees no reason not to consider the definition of "spray" given in document D16, which is an excerpt of a standard textbook, as illustrating the ordinary technical meaning of the term "spray" for the skilled person. According to D16, a spray is a liquid-in-gas dispersion in the form of a multitude of drops, and the drops are formed during the process of atomization. Nor has Appellant II contested the definition of "spray" given in document D16.
- 4.7 Nevertheless, Appellant II has submitted that, in view of paragraphs [0035], [0047] and [0048] of the description of the patent in suit, the term "spray" in Claim 1 must be interpreted as covering other forms than only sprays as the skilled person would understand them.
- 4.8 In that respect, the Board, however, firstly notes that the meaning of "spray" given at lines 50 to 51 of paragraph [0035], i.e. a collection of small droplets is, in the Board's view, indisputably consistent with the definition given in D16.
- 4.9 While it might have been questionable under Article 84 EPC as to whether a "fine liquid stream" or "a gas" (cf. paragraph [0035], lines 51 to 52) could fall under the ordinary definition of a spray, this cannot be further considered in opposition appeal proceedings, since lack of clarity is not a ground of opposition.
- 4.10 Furthermore while, in the case of the presence of an unclear feature in a granted claim, it would be necessary to take into account the whole disclosure of

the patent in order to arrive at an interpretation of the claim which is technically sensible, this is not the case here since the term "spray" present in Claim 1 has, as admitted by Appellant II, a well recognized meaning in the art.

4.11 Consequently, any inconsistency between description and Claim 1 which might emerge from paragraph [0035] cannot be used to give a different meaning to the claim feature "spray" which in itself imparts a clear, credible technical teaching to the skilled reader (cf. T 1018/02 of 9 December 2003; Reasons point 3.8, and T 396/01 of 25 May 2004 Reasons 2.3; both not published in OJ EPO).

4.12 Concerning paragraph [0047] and [0048] of the patent in suit, the Board observes that independent Claim 7 as originally filed was directed to a "method for preparing a supported catalyst system, said method comprising first applying catalyst solution to porous support material wherein said support material is disposed in a conical dryer and thereafter drying the supported catalyst in the same dryer."

4.13 It is hence evident that original Claim 7 contained no limitation concerning the way of applying the catalyst solution to the porous support material present in the conical dryer. The Board can however only state that original Claim 7 had no counterpart in the granted claims.

4.14 It is further evident that paragraphs [0047] and [0048] are introduced by paragraph [0046] which deals with the preparation of the supported catalyst in a conical

dryer, i.e. the process encompassed by original Claim 7. This process is further illustrated by Examples 3 and 4 of the patent in suit.

- 4.15 Consequently, the mention of several ways of applying the catalyst solution at lines 38 to 41 in paragraph [0047] (i.e. dropwise, as a stream directly, by using a dip tube, or more preferably by using a spray nozzle) must, in the Board's view, be read in the context of original Claim 7, which did not restrict the way of applying the catalyst solution only to spraying. Hence, applying the catalyst solution dropwise, as a stream directly or by using a dip tube, must be considered as representing different technical alternatives to spray for the addition of the catalyst solution, and not as describing ways of spraying the catalyst solution.
- 4.16 Thus, while, in view of the absence of a claim corresponding to original Claim 7 in the granted patent, it might have been questionable as to whether the description of the patent in suit (cf. in particular paragraph [0047], Examples 3 and 4) has been adequately adapted to the claims as granted in accordance with Article 84 EPC, this lack of an appropriate adaptation cannot be used to give a different meaning (e.g. "dropwise addition") to the claim feature "spray" which in itself imparts a clear, credible technical teaching to the skilled reader.
- 4.17 Thus, the Board comes to conclusion that the term "spray" in Claim 1 must be given its ordinary technical meaning, as illustrated by document D16.

5. *Novelty*

5.1 Lack of novelty of the subject-matter of Claim 1 of the main request has been alleged by Appellant II in view of document D1 (Methods 2 and 3 thereof; cf. minutes of Oral proceedings before the Opposition Division, page 1, lines 15 to 16) and in view of Example 1 of D3.

5.2 Concerning Methods 2 and 3 of document D1, the Board firstly observes that in these methods the metallocene catalyst solution is applied "dropwise" on the inorganic oxide support (cf. D1, page 17, lines 31 to 35; page 18, lines 22 to 25).

5.3 The Board further observes that Appellant II has admitted that the ordinary meaning of "spray" does not extend to dropwise addition (letter of 22 January 2007; page 5, lines 15 to 18).

5.4 Since, however, as indicated above the word "spray" in Claim 1 must be given its ordinary meaning, the logical consequence of the admission of Appellant II can only be that its objection of lack of novelty in view of Methods 2 and 3 of D1 must fail.

5.5 Example 1 of D3 discloses the preparation of a silica supported metallocene catalyst which comprises the steps of:

1. Dehydrating the silica at 250°C for 4 hours using air to purge and then purging with nitrogen on cooling.
2. Transferring the silica to a mix-vessel.

3. Adding 7.148 g of bis(n-butylcyclopentadienyl) zirconium dichloride and 698 g of methylaluminoxane to a bottle.
4. Agitating the catalyst solution in the bottle until the metallocene dissolves in the MAO solution.
5. Transferring the MAO and metallocene solution into the mix-vessel containing the dehydrated silica slowly while agitating the silica bed vigorously to make sure that the catalyst solution is well dispersed into the silica bed.
6. After the addition, continuing to agitate the catalyst for 30 minutes.
7. Starting drying the catalyst by purging with nitrogen for 5 hours at 45°C, and
8. Sieving the catalyst to remove particles larger than 150 microns (cf. D3, page 11, lines 14 to 32).

5.6 It is hence evident that Example 1 of D1 (cf. step 5 of the process) does not disclose that a spray of the catalyst solution is contacted with the inorganic support (silica).

5.7 Consequently, Example 1 of D1 cannot be considered as novelty destroying for the subject-matter of Claim 1.

5.8 It thus follows that the subject-matter of Claim 1 must be regarded as novel over the prior art relied on by Appellant II. The same conclusion applies *a fortiori* to the subject-matter of dependent Claims 2 to 6 (Article 54 EPC).

6. *Remittal*

6.1 As indicated above in point III, the Opposition Division rejected the main request of the Patent Proprietor on the ground of lack of novelty, and as a consequence it did not express its opinion regarding the ground of lack of inventive step in respect of that request.

6.2 Taking further into account the request of Appellant I for remittal, the Board decides to exercise its power under Article 111(1) EPC to remit the case to the first instance for further prosecution.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted back to the first instance for further prosecution on the basis of the main request as filed with the statement of grounds of appeal.

The Registrar:

The Chairman:

E. Görgmaier

R. Young