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**Datasheet for the decision
of 12 June 2012**

Case Number: T 2350/08 - 3.3.07
Application Number: 98931676.5
Publication Number: 1011860
IPC: B01J 29/90, C07C 1/20
Language of the proceedings: EN

Title of invention:

Process for converting oxygenates to olefins using molecular sieve catalysts comprising desirable carbonaceous deposits

Patent Proprietors:

ExxonMobil Chemical Patents Inc.

Opponents:

UOP LLC
P.O. Box 5017
NORSK HYDRO ASA

Headword:

-

Relevant legal provisions:

EPC Art. 123(2), 100(c)
RPBA Art. 13(1)

Keyword:

"Main Request - not allowable - added subject-matter"
"Admissibility of Auxiliary Requests 1 to 11 (no)"

Decisions cited:

-

Catchword:

-



Case Number: T 2350/08 - 3.3.07

DECISION
of the Technical Board of Appeal 3.3.07
of 12 June 2012

Appellants:
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 22 October 2008
rejecting the opposition filed against European
patent No. 1011860 pursuant to Article 101(2)
EPC.

Composition of the Board:

Chairman: J. Riolo
Members: F. Rousseau
D. T. Keeling

Summary of Facts and Submissions

I. The Appellants (Opponents 1) lodged an appeal on 15 December 2008 against the decision of the opposition division posted on 22 October 2008 rejecting the oppositions against European patent No. 1 011 860 pursuant to Article 101(2) EPC, second sentence, which was granted on the basis of seven claims, claim 1 of which read as follows:

"1. A method for selectively converting oxygenates to ethylene and propylene which is catalyzed by a molecular sieve catalyst, wherein an amount of from 2 wt% to 30 wt% carbonaceous deposit are maintained on a total reaction volume of catalyst by totally regenerating only a portion of the total reaction volume of catalyst, the regenerated portion having a coke content on regenerated catalyst of less than 0.5 wt%, and mixing the regenerated portion with the unregenerated remainder of the total reaction volume of catalyst".

II. The patent in suit originated from European patent application No. 98 931 676.5, based on International application PCT/US1998/013404 filed on 30 June 1998 and published under WO 99/01219. Claim 1 of the application as filed read as follows:

"1. A method for treating a molecular sieve catalyst comprising:
contacting a feed comprising oxygenates with a total reaction volume of a molecular sieve catalyst under conditions effective to produce a

stream comprising light olefins, wherein said total reaction volume includes desirable carbonaceous deposits which render said catalyst more selective to light olefins than in the absence of said desirable carbonaceous deposits; and, upon accumulation of undesirable carbonaceous deposits effective to interfere with catalyst activity, said desirable carbonaceous deposits are maintained on said molecular sieve catalyst by a process comprising:

separating said total reaction volume of molecular sieve catalyst into a portion and a remainder; treating said portion with a regeneration medium under conditions effective to remove said undesirable carbonaceous deposits, forming a regenerated portion comprising from about 0 wt% to about a regenerated amount of carbonaceous deposits; and mixing said regenerated portion with said remainder, wherein said regenerated amount of carbonaceous deposits comprises an amount sufficient, upon said mixing, to produce a regenerated total reaction volume comprising said desirable carbonaceous deposits."

- III. Two notices of opposition had been filed by the Appellants and by the Party as of right (Opponents 2) requesting revocation of the opposed patent in its entirety. The Appellants and the Party as of right had invoked the grounds of opposition of lack of novelty and inventive step under Article 100(a) EPC and lack of sufficiency under Article 100(b) EPC. The Appellants also argued, under Article 100(c) EPC, that the

subject-matter of the opposed patent extended beyond the content of the application as filed.

IV. It was held in the contested decision, *inter alia*, that the subject-matter of the patent as granted did not extend beyond the content of the application as filed. In this respect and as regards the omission in claim 1 of the features relating to "desirable carbonaceous deposits" and "undesirable carbonaceous deposits", it was acknowledged that original claim 1 made a distinction between desirable and undesirable carbonaceous deposits, which were defined in the description as originally filed to block different specific portions of the molecular sieve catalyst, influencing thereby the selectivity of the catalyst towards ethylene and propylene production. It was however unambiguous from the original description that a desired level of coking between 2 wt% and 30 wt%, as defined in claim 1 as granted, led to the highest selectivity in ethylene and propylene and thus was meant to define the amount of desirable carbonaceous deposits. The replacement of the unclear terms "desirable" and "undesirable" by a clear feature, namely a measurable amount of carbonaceous deposits of 2 wt% to 30 wt% which had to be maintained in the catalyst, therefore, did not introduce any added matter.

V. The statement setting out the grounds of appeal was submitted on 27 February 2009. In response thereto, the Patent Proprietors (Respondents) submitted *inter alia* with letter of 15 September 2009 four sets of claims as their First to Fourth Auxiliary Requests.

VI. In a communication of 4 May 2012 sent in preparation of the oral proceedings, the Board addressed *inter alia* the question whether the skilled reader of the application as filed would understand that any amount of carbonaceous deposits comprised in the range of 2 wt% to 30 wt% necessarily fulfilled the functional definition of "desirable carbonaceous deposits" within the meaning given in the application as filed, i.e. carbonaceous deposits primarily blocking portions of the surface of the catalysts that were not selective to the production of ethylene and propylene, or whether these two requirements had to be seen in combination, the expression "a desirable carbonaceous deposit" imposing a restriction on the upper amount of carbonaceous deposit within the range of 2 wt% to 30 wt%.

VII. With a letter of 11 May 2012, the Respondents submitted in replacement of the four Auxiliary Requests submitted with letter of 15 September 2009, ten sets of claims as First to Tenth Auxiliary Requests. Independent claims 1 of those Auxiliary Requests read as follows:

First Auxiliary Request (Set A)

"1. A method for selectively converting oxygenates to ethylene and propylene which is catalyzed by a molecular sieve catalyst, wherein an amount of from 2 wt% to 30 wt% carbonaceous deposits are maintained on a total reaction volume of catalyst by totally regenerating only a portion of the total reaction volume of catalyst, the regenerated portion having a coke content on regenerated catalyst of less than 0.5 wt%, and mixing the

regenerated portion with the unregenerated remainder of the total reaction volume of catalyst;

said total reaction volume of catalyst comprising desirable carbonaceous deposits which render said catalyst more selective to ethylene and propylene than in the absence of said desirable carbonaceous deposits;

said desirable carbonaceous deposits blocking portions on the surface of the catalyst that are not selective to the production of ethylene and propylene".

Second Auxiliary Request (Set B)

The wording of claim 1 of the Second Auxiliary Request differed from that of the First Auxiliary Request (Set A) only in that it contained the following two additional paragraphs at the end of the claim:

" said portion of the total reaction volume of catalyst being regenerated upon accumulation of undesirable carbonaceous deposits effective to interfere with catalyst activity;

said undesirable carbonaceous deposits blocking the micropores of the catalyst which results in an adverse impact on the selectivity of the catalyst to ethylene and propylene."

Third Auxiliary Request (Set C)

The wording of claim 1 of the Third Auxiliary Request differed from that of the First Auxiliary Request (Set A) only in that the two last paragraphs had been replaced by the following paragraph:

" the total regeneration removing carbonaceous deposits from both the micropores and from less selective surface areas of said portion of the total volume of catalyst."

Fourth Auxiliary Request (Set D)

The wording of claim 1 of the Fourth Auxiliary Request differed from that of the Second Auxiliary Request (Set B) only in that it contained the following additional paragraph at the end of the claim:

" the total regeneration removing carbonaceous deposits from both the micropores and from less selective surface areas of said portion of the total volume of catalyst."

Fifth Auxiliary Request (Set E)

"1. A method for selectively converting oxygenates to ethylene and propylene which is catalyzed by a molecular sieve catalyst, said method comprising contacting a feed comprising oxygenates with a total reaction volume of said molecular sieve catalyst under conditions effective to produce a stream comprising ethylene and propylene, wherein

said total reaction volume includes desirable carbonaceous deposits which render said catalyst more selective to ethylene and propylene than in the absence of said desirable carbonaceous deposits; and,

upon accumulation of undesirable carbonaceous deposits effective to interfere with catalyst activity, said desirable carbonaceous deposits are maintained on said molecular sieve catalyst by a process comprising:

separating said total reaction volume of molecular sieve catalyst into a portion and a remainder;

treating said portion with a regeneration medium under conditions effective to remove said undesirable carbonaceous deposits, forming a regenerated portion comprising from 0 wt% to less than 0.5 wt% of carbonaceous deposits; and

mixing said regenerated portion with said remainder, wherein said regenerated amount of carbonaceous deposits comprises an amount sufficient, upon said mixing, to produce a regenerated total reaction volume comprising said desirable carbonaceous deposits;

wherein an amount of from 2 wt% to 30 wt% carbonaceous deposits are maintained on said total reaction volume of catalyst by totally regenerating only said portion of the total reaction volume of catalyst;

said undesirable carbonaceous deposits blocking the micropores of the catalyst which results in an adverse impact on the selectivity of the catalyst to ethylene and propylene;

said desirable carbonaceous deposits blocking portions on the surface of the catalyst that are not selective to the production of ethylene and propylene."

Sixth Auxiliary Request (Set F)

- "1. A method for selectively converting oxygenates selected from aliphatic alcohols, ethers, aldehydes, ketones, carboxylic acids and carbonates having an aliphatic moiety containing from 1 to 4 carbon atoms, to ethylene and propylene, which method is catalyzed by a SAPO molecular sieve catalyst, wherein an amount of from 2 wt% to 20 wt% carbonaceous deposits are maintained on a total reaction volume of catalyst by totally regenerating only a portion of the total reaction volume of catalyst, the regenerated portion having a coke content on regenerated catalyst of less than 0.5 wt%, and mixing the regenerated portion with the unregenerated remainder of the total reaction volume of catalyst."

Seventh Auxiliary Request (Set G)

The wording of claim 1 of the Seventh Auxiliary Request differed from that of the Sixth Auxiliary Request (Set F) only in that it additionally contained at the

end of the claim the last five paragraphs of claim 1 according to the Fourth Auxiliary Request (Set D).

Eighth Auxiliary Request (Set H)

Claim 1 of the Eighth Auxiliary Request read as follows:

"1. A method for selectively converting oxygenates to ethylene and propylene which is catalyzed by a SAPO molecular sieve catalyst, said method comprising

contacting a feed comprising oxygenates selected from aliphatic alcohols, ethers, aldehydes, ketones, carboxylic acids and carbonates having an aliphatic moiety containing from 1 to 4 carbon atoms, with a total reaction volume of said SAPO molecular sieve catalyst under conditions effective to produce a stream comprising ethylene and propylene, wherein said total reaction volume includes desirable carbonaceous deposits which render said catalyst more selective to ethylene and propylene than in the absence of said desirable carbonaceous deposits; and,

upon accumulation of undesirable carbonaceous deposits effective to interfere with catalyst activity, said desirable carbonaceous deposits are maintained on said SAPO molecular sieve catalyst by a process comprising:

separating said total reaction volume of SAPO molecular sieve catalyst into a portion and a remainder;

treating said portion with a regeneration medium under conditions effective to remove said undesirable carbonaceous deposits, forming a regenerated portion comprising from 0 wt% to less than 0.5 wt% of carbonaceous deposits; and

mixing said regenerated portion with said remainder, wherein said regenerated amount of carbonaceous deposits comprises an amount sufficient, upon said mixing, to produce a regenerated total reaction volume comprising said desirable carbonaceous deposits;

wherein an amount of from 2 wt% to 30 wt% carbonaceous deposits are maintained on said total reaction volume of catalyst by totally regenerating only said portion of the total reaction volume of catalyst;

said undesirable carbonaceous deposits blocking the micropores of the catalyst which results in an adverse impact on the selectivity of the catalyst to ethylene and propylene;

said desirable carbonaceous deposits blocking portions on the surface of the catalyst that are not selective to the production of ethylene and propylene."

Ninth Auxiliary Request (Set I)

The wording of claim 1 of the Ninth Auxiliary Request differed from that of the Fourth Auxiliary Request (Set

D) only in that it contained the following additional paragraph at the end of the claim:

" said method being carried out in a circulating fluid bed reactor with continuous regeneration, the temperature in the regenerator being in the range of from about 550°C to 700°C."

Tenth Auxiliary Request (Set K)

The wording of claim 1 of the Tenth Auxiliary Request differed from that of the Fifth Auxiliary Request (Set E) only in that it contained at the end of the claim the last paragraph of claim 1 of Set I indicated above.

VIII. In the course of oral proceedings, which took place on 12 June 2012 in the announced absence of the Party as of right, the Respondents submitted an Eleventh Auxiliary Request labelled Set F', claim 1 of which read as follows:

Eleventh Auxiliary Request (Set F')

"1. A method for selectively converting methanol to ethylene and propylene, which method is catalyzed by SAPO-34 molecular sieve catalyst, wherein desirable carbonaceous deposits comprising an amount of from 2 wt% to 30 wt% carbonaceous deposits are maintained on a total reaction volume of catalyst by totally regenerating only a portion of the total reaction volume of catalyst, the regenerated portion having a coke content on regenerated catalyst of less than 0.5 wt%, and

mixing the regenerated portion with the unregenerated remainder of the total reaction volume of catalyst."

IX. The Appellants' arguments which are pertinent for the decision can be summarized as follows :

- (a) Claim 1 of the patent in suit omitted a preliminary step taught by the application as filed according to which desirable and undesirable carbonaceous deposits must be first accumulated before regeneration of a part of the coked catalyst is carried out. Furthermore, claim 1 of the patent in suit, contrary to claim 1 as originally filed, neither defined that regeneration should remove undesirable carbonaceous deposits, nor that desirable carbonaceous deposits should be maintained on the molecular sieve catalyst, while the passage starting with the last sentence of page 3 indicated that those measures were used in order to achieve the goal followed by the present invention.

- (b) Moreover, claim 1 as granted allowed the amount of 2 wt% to 30 wt% carbonaceous deposit to comprise desirable, as well as undesirable carbonaceous deposits, whereas the amount of 2 wt% to 30 wt% was disclosed in the application as filed, for example in claim 5, only in relation to desirable carbonaceous deposits. Furthermore, the wording "desirable carbonaceous deposit" was meant to define a specific type of carbonaceous deposit, which had to be differentiated from undesirable

carbonaceous deposits, the later blocking the micropores of the molecular sieve catalyst and interfering with catalytic activity.

- (c) The last paragraph of page 10, indicated by the Respondents as basis for claim 1 of the patent in suit, had to be read in context of the whole disclosure, according to which two types of carbonaceous deposits existed.
- (d) Hence, claim 1 of the granted patent did not meet the requirements of Article 123(2) EPC.
- (e) The Auxiliary Requests, which had been submitted at the oral proceedings or one month before, i.e. more than three years after the statement setting out the grounds of appeal, contained various amendments which could have been filed at an earlier stage of the proceedings. These belated Requests should not be admitted into the proceedings, as they did not clearly overcome the objections raised against the Main Request. In addition, they gave rise to new objections in respect to the requirements of Article 123(2) and (3) EPC, as well as to those of Rule 80 EPC. The Eleventh Auxiliary Request constituted in particular an undue generalization of the example of the application as filed, in breach of Article 123(2) EPC.

X. The arguments of the Respondents which are pertinent for the decision can be summarized as follows :

- (a) It was acknowledged that the basis for claim 1 of the patent in suit was not to be found in claim 1 as originally filed. This claim was, however, based on the passages of the application as filed at page 1, lines 7-10, page 2, lines 4-7, page 3, lines 3-15, page 4, line 17 to page 5, line 11 and page 10, lines 8-15.
- (b) Claim 1 had been amended in examination proceedings in reaction to an objection of lack of clarity, concerning in particular the terms "desirable carbonaceous deposits" and "undesirable carbonaceous deposits". Here, the Patent proprietors, faced with this clarity issue had taken a reasonable approach in overcoming that objection, namely by replacing the wording "desirable carbonaceous deposits" by an amount of carbonaceous deposits of 2 wt% to 30wt%.
- (c) The statement in claim 1 as granted that carbonaceous deposits in amounts of 2 wt% to 30 wt% were maintained implied that the carbonaceous deposits concerned were "desirable" within the meaning of the patent in suit. "Desirable carbonaceous deposits" were defined on page 5, lines 5-8 of the application as filed to comprise an amount of carbonaceous deposits of preferably 2 wt% to 30 wt% based on the total volume of catalyst. Moreover, the term "undesirable" was then by inference the coke level above the desired coke level.
- (d) It was not necessary to define the sequence of steps defined in original claim 1 in order to

carry out the invention. The statement in claim 1 as granted that regeneration was complete meant that carbonaceous deposits were completely removed, i.e. also undesirable carbonaceous deposits present in the micropores.

- (e) It was acknowledged that the First to Tenth Auxiliary Requests did not contain any amendment aimed at overcoming either directly or implicitly the objection in respect of the omission in claim 1 as granted of the feature "desirable carbonaceous deposits". These Auxiliary Requests had been submitted in reaction to questions or objections addressed in the Board's communication. The amendments present in the First to Fifth Auxiliary Requests were meant to overcome other issues in relation to the requirements of Article 123(2) EPC, while the Sixth to Tenth Auxiliary Requests were intended to further distance the claimed subject-matter from the state of the art, in relation to the objections raised under Article 56 EPC.

- (f) Claim 1 of the Eleventh Auxiliary Request contained the definition of the wording "desirable carbonaceous deposit" as disclosed on page 5, lines 5-8 of the original application. Furthermore, the type of molecular sieve catalyst and oxygenates had been restricted to those employed in the experimental evidence, which demonstrated an increase of selectivity towards ethylene and propylene.

XI. The Party as of right did not present any argument.

- XII. The Appellants requested that the decision under appeal be set aside and that the patent be revoked.
- XIII. The Respondents requested as a Main Request that the appeal be dismissed or alternatively that the patent be maintained on the basis of the claims of one of the First to Tenth Auxiliary Requests, all submitted with letter of 11 May 2012, or alternatively on the basis of the claims of the Eleventh Auxiliary Request submitted during the oral proceedings before the Board.
- XIV. At the end of the oral proceedings, the decision of the Board was announced.

Reasons for the Decision

1. The appeal is admissible

Main Request - Ground of opposition under Article 100 c) EPC

2. Whereas the Appellants argue that claim 1 as granted extends beyond the content of the application as filed, in particular because an amount of 2 wt% to 30 wt% carbonaceous deposit based on a total reaction volume of catalyst, would only be disclosed for a specific type of carbonaceous deposit, namely a "desirable" carbonaceous deposit, which is further defined in the application as filed, the Respondents are of the opinion that claim 1 as granted is based on the first paragraph of the application as filed (under the heading "Field of the Invention"), supplemented by additional information provided in the description as

originally filed, in particular on page 5, lines 5-7 and page 10, lines 8-15. The latter are of the opinion that the expression "desirable carbonaceous deposit" merely means an amount of carbonaceous deposit in the range of 2 wt% to 30 wt% based on a total reaction volume of catalyst.

- 2.1 The paragraph headed "Field of the Invention" reads *"The present invention relates to methods for selectively converting oxygenates to light olefins, preferably ethylene and propylene, in which desired carbonaceous deposits are maintained on a total reaction volume of catalyst by totally regenerating only a portion of the total reaction volume of catalyst and mixing the regenerated portion with the unregenerated total reaction volume of catalyst"*. The Respondents assert that the skilled reader would understand that the expression "*desired carbonaceous deposits*" in the above mentioned passage is meant in the light of the passages on page 5, lines 5-7 and page 10, lines 12-15 to define "an amount of from 2 wt% to 30 wt% carbonaceous deposit". First, the Board observes that the paragraph "Field of the Invention" does not refer, for a definition of the wording "*desired carbonaceous deposits*", to the additional passages cited by the Respondents. Second, the paragraph "Field of the Invention" and the additional passages cited by the Respondents, even if they appear, when taken alone, to confirm the Respondents' interpretation of that wording, should not be considered in isolation. They must be read, in order to objectively assess their technical meaning, in the context of the text in which they are embedded, which

determines the disclosure of the invention, i.e. in the light of the whole description and the claims.

2.2 Accordingly, the sentence on page 5, lines 8-10, immediately following one of the two passages cited by the Respondents, cannot be ignored by the reader of the application as filed, as it provides a definition of the wording "desirable carbonaceous deposits", namely "*Desirable carbonaceous deposits*"--even if they comprise over 30 wt% of the total reaction volume of molecular sieve catalyst--are carbonaceous deposits which primarily block portions of the surface of the catalyst that are not selective to the production of C₂-C₃ olefins". Neither is it possible to ignore the following passages of the application as filed, from which emerges in a consistent manner the same meaning for the wording "desirable carbonaceous deposit". The summary of the invention given in the paragraph bridging pages 2 and 3 of the application as filed indicates that the invention provides a method in which a feed comprising oxygenates is contacted with a total reaction volume of a molecular sieve catalyst under conditions effective to produce a stream comprising C₂-C₃ olefins, wherein said total reaction volume comprises "desirable carbonaceous deposits" which render said catalyst more selective to C₂-C₃ olefins than in the absence of said "desirable carbonaceous deposits"; and wherein, upon accumulation of "undesirable carbonaceous deposits" effective to interfere with catalyst activity, said "desirable carbonaceous deposits" are maintained on said molecular sieve catalyst by a specific regeneration process defined in this passage, as well as in claim 1. This technical information is confirmed by the goal of the present invention described in the

paragraph bridging pages 3 and 4, namely to maximize the production of light olefins, preferably ethylene and propylene, during the conversion of oxygenates to olefins, which is achieved by allowing "desirable carbonaceous deposits" to accumulate on the molecular sieve catalyst while removing "undesirable carbonaceous deposits".

2.3 Further, in line with the information provided by the above cited passages, the passage on page 4, lines 8-11, indicates that "*Coke that is produced during the conversion of oxygenates to olefins is known to deposit both on the surface and in the micropores of molecular sieve catalysts. The reactions that selectively convert oxygenates to ethylene and propylene occur in the micropores of the molecular sieve catalyst*". The specific regeneration step defined in claim 1 and in the summary of the invention aims therefore, as follows from the passage from page 4, line 11 to page 5, line 4, to remove carbonaceous deposits that build up in the micropores of the molecular sieve and thus to increase the number of sites available to selectively convert oxygenates to ethylene and propylene.

2.4 Therefore, the skilled reader of the application as filed is given the unmistakable information that a distinction must be made between "desirable" and "undesirable" carbonaceous deposits, at least in their location within the molecular sieve catalyst and their resulting function in the conversion of oxygenates. Summing up, "desirable" carbonaceous deposits are carbonaceous deposits which primarily block portions of the surface of the catalyst that are not selective to the production of ethylene and propylene, i.e.

catalytic portions other than the micropores, whereas "undesirable" carbonaceous deposits are carbonaceous deposits that build up in the micropores of the molecular sieve and result in an adverse impact on its selectivity to ethylene and propylene.

3. It follows from the specific location of "desirable" carbonaceous deposits within a molecular sieve, that the maximum amount of "desirable" carbonaceous deposits is a function of the morphology of the molecular sieve catalyst. However, no indication can be found in the application as filed, that any amount of carbonaceous deposit in the range of 2 wt% to 30 wt% would only consist of carbonaceous deposits that primarily block portions of the surface of the catalyst that are not selective to the production of ethylene and propylene olefins. On the contrary, in example 4 of the application as filed, which is meant to comprise a regeneration step in accordance with claim 1, a portion of the catalyst containing an amount of carbonaceous deposit of 5,8 wt% is fully regenerated, which implies that said catalyst despite an amount of carbonaceous deposit within the range of 2 wt% to 30 wt% must be considered to contain undesirable carbonaceous deposits. In this respect, the feature defined by claim 5 as originally filed, that said desirable carbonaceous deposits include an amount of from about 2 wt% to about 30 wt% can only be understood as defining that the amount of carbonaceous deposits that primarily block portions of the surface of the catalyst that are not selective to the production of C₂-C₃ olefins can vary within this range, which however does not mean that any amount of carbonaceous deposits within this range would correspond for any molecular sieve catalyst to

carbonaceous deposits that primarily block portions of the surface of the catalyst that are not selective to the production of C₂-C₃ olefins.

4. Moreover, it follows from the sentence bridging pages 10 and 11, where it is stated that a preferred level of coking, or "desirable carbonaceous deposits" can be maintained by adjusting the ratio of the flow of the coked catalyst between the regenerator and the reactor, that the preferred level of coke of 2 wt% to 30 wt% defined in the paragraph bridging pages 10 and 11, also relates to "carbonaceous deposits" which primarily block portions of the surface of the catalyst that are not selective to the production of C₂-C₃ olefins. This equivalence of both terminologies is in line with the statement on page 2, lines 12-14 according to which *"Methods are needed which will maintain a desired level of coking on molecular sieve catalysts during the conversion of oxygenates to olefins while maintaining maximum activity of the catalyst"*, the present invention relating to methods for selectively converting oxygenates to light olefins, preferably ethylene and propylene.

5. Consequently, upon an objective analysis of the content of the application as filed, i.e. one which takes into account the whole disclosure of the application as filed, and not only selected portions thereof taken in isolation from the remainder of the application documents, the expression "desirable carbonaceous deposits" employed in the first paragraph of the application as filed (under the heading "Field of the Invention") and in other passages of the application as filed cannot be equated with an amount of carbonaceous

deposit comprised in the range of from 2 wt% to 30 wt%, but with carbonaceous deposits, which possibly could be present in that amount, but which must fulfil the function of primarily blocking portions of the surface of the catalyst that are not selective to the production of C₂-C₃ olefins. Thus, the Respondents' line of argumentation that claim 1 as granted does not infringe the requirements of Article 123(2) EPC, because inter alia the expression "desired carbonaceous deposit" means in the application as filed an amount of carbonaceous deposit in the range of 2 wt% to 30 wt% based on the total reaction volume of catalyst, fails to convince.

6. Furthermore, it was not shown, in fact not even argued, that the additional features contained in claim 1 as granted necessarily imply that the amount of carbonaceous deposit of 2 wt% to 30 wt% defined in that claim necessarily includes only desirable carbonaceous deposits within the meaning of the application as filed given above.
7. Therefore, the Board concludes that the subject matter of claim 1 as granted extends beyond the content of the application as filed, thus, contravening the provisions of Article 123(2) EPC. In these circumstances, the Respondents' Main Request is not allowable and must be rejected.

Admissibility of the Auxiliary Requests

8. The Appellants objected to admitting the First to Tenth Auxiliary Requests filed by Respondents one month before the oral proceedings and the Eleventh Auxiliary

Request submitted during the oral proceedings for the reason that they were late-filed and prima facie not allowable.

9. According to Article 12(4) RPBA, the Board shall take into account all facts, evidence and requests submitted by the parties with the statement of the grounds of appeal and the reply to it but may hold inadmissible facts, evidence and requests which could have been presented during the first instance proceedings. Furthermore, according to Article 13(1) RPBA, any amendment to a party's case after it has filed its grounds of appeal or reply may be admitted and considered at the Board's discretion. The discretion shall be exercised in view of inter alia the complexity of the new subject-matter submitted, the current state of the proceedings and the need for procedural economy. Admitting without proper justification late requests that do not immediately overcome existing objections or give rise to fresh issues that seriously appear to prejudice their allowability, would adversely affect procedural economy.

10. As acknowledged by the Respondents during the oral proceedings, the First to Tenth Auxiliary Requests submitted only one month before the oral proceedings before the Board do not contain any amendment aimed at overcoming either directly or implicitly the objection in respect of the omission in claim 1 as granted of the feature "desirable carbonaceous deposits", as they have been submitted in reaction to other questions or objections addressed in the Board's communication. Those Auxiliary Requests therefore cannot constitute a genuine attempt at remedying the deficiency in relation

to the Main Request addressed above. This is confirmed by the fact that they do not define, be it explicitly or implicitly, that the carbonaceous deposits accounting for the amount of 2 wt% to 30 wt% are carbonaceous deposits which primarily block portions of the surface of the catalyst that are not selective to the production of C₂-C₃ olefins. Under those circumstances and in view of the need for procedural economy, the Board exercised its discretion under Article 13(1) RPBA not to admit the First to Tenth Auxiliary Requests, which obviously cannot be allowable for the same reason as for the Main Request.

Eleventh Auxiliary Request

11. According to claim 1 of the Eleventh Auxiliary Request, "desirable carbonaceous deposits comprising an amount of from 2 wt% to 30 wt% carbonaceous deposits" are maintained on a total reaction volume of catalyst. First, the meaning of the above expression in quotation marks is obscure as the wording "desirable carbonaceous deposit" is by nature more specific than that the wording "carbonaceous deposit" it is meant to comprise. Second, should this expression mean desirable carbonaceous deposit are comprised in an amount of from 2 wt% to 30 wt%, the claim would allow the presence of undesirable carbonaceous deposit on the molecular sieve catalyst, which in breach of the requirements of Article 123(3) EPC, would allow a total amount of "desirable" and "undesirable" carbonaceous deposits on the catalyst above the level of 30 wt% of carbonaceous deposit defined in claim 1 as granted. Third, the application as originally filed does not appear to provide any basis for defining a SAPO 34 molecular

sieve catalyst which would contain up to 30 wt% of desirable carbonaceous deposit within the meaning of the application as filed. In this respect reference is made to the examples of the application as filed, wherein a portion of the SAPO-34 catalyst is regenerated to remove undesirable carbonaceous deposits, when a level of carbonaceous amount of 5,8 wt% is attained (see also point 3. *supra*). Hence, the Eleventh Auxiliary Request introduces at a late stage of the appeal proceedings fresh issues which prejudice its allowability. Therefore, by virtue of the power conferred to the Board by Article 13(1) RPBA, the Eleventh Auxiliary Request is not admitted into the proceedings either.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar

The Chairman

S. Fabiani

J. Riolo