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**Datasheet for the decision
of 7 March 2013**

Case Number: T 0494/11 - 3.3.07
Application Number: 02757214.8
Publication Number: 1425099
IPC: B01J 29/76, B01D 53/56
Language of the proceedings: EN

Title of invention:

Hydrothermally stable metal promoted zeolite beta for NOx reduction

Patent Proprietor:

BASF Corporation

Opponents:

Uhde GmbH
Clariant Produkte (Deutschland) GmbH
Umicore AG & Co. KG

Headword:

-

Relevant legal provisions:

EPC Art. 54, 83
RPBA Art. 12, 13

Keyword:

"Disclosure - sufficiency (yes)"
"Novelty (yes)"
"Amendment of a party's case - not admitted"

Decisions cited:

-

Catchword:

-



Case Number: T 0494/11 - 3.3.07

D E C I S I O N
of the Technical Board of Appeal 3.3.07
of 7 March 2013

Appellant: Clariant Produkte (Deutschland) GmbH
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
3 January 2011 concerning maintenance of
European patent No. 1425099 in amended form.

Composition of the Board:

Chairman: J. Riolo
Members: D. Semino
D. T. Keeling

Summary of Facts and Submissions

- I. The appeal of opponent 2 (appellant) lies against the decision of the opposition division announced at the oral proceedings on 1 December 2010 to maintain as amended European Patent 1 425 099.
- II. Three notices of opposition were filed against the granted patent requesting revocation of the patent in its entirety on the grounds of lack of novelty (opponents 2 and 3), lack of inventive step (all opponents), insufficiency of disclosure (opponent 3) and extension beyond the content of the application as filed (opponent 3), in accordance with Article 100(a), (b) and (c) EPC.
- III. The oppositions were based *inter alia* on the following documents:
- D3: WO-A-00/48715
D4: WO-A-02/41991
D5: US-A-4 961 917
D14: EP-A-0 169 026
- IV. The decision was based on claims 1 to 10 of the main request and claims 1 to 9 of the first auxiliary request with a description adapted thereto, all filed during the oral proceedings on 1 December 2010.

Claim 1 according to both the main and the first auxiliary request read as follows:

"1. A process for improving the stability of an iron-promoted aluminosilicate zeolite beta catalyst under

oxidizing and/or hydrothermal conditions comprising treating an aluminosilicate zeolite beta having a Si/Al ratio of 10 or below and a reduced sodium content of less than 500 ppm sodium cations with an iron salt and calcining said catalyst under oxidizing conditions to form said iron-promoted zeolite beta catalyst wherein at least a portion of said iron is in the form of Fe(OH), said process further comprising treating said zeolite so as to form extra-framework alumina chains associated with said zeolite."

The main request included a claim 10 which was directed to a method for the reduction of nitrogen oxides with ammonia by forming a catalyst according to the process of claim 1 and contacting a gaseous stream with it. That claim was not present in the first auxiliary request.

V. The decision of the opposition division can be summarised as follows:

- (a) Claim 10 of the main request did not meet the requirements of Article 123(2) EPC due to the lack of the specific temperature range for the contact of the gaseous stream with the catalyst.
- (b) The first auxiliary request met the requirements of Article 123 in view of the deletion of claim 10.
- (c) Claim 1 of the first auxiliary request was clear, because the Si/Al ratio related to the value before treatment with iron salt and calcination, and sufficiently disclosed, because no evidence of the contrary had been provided.

(d) The subject-matter of claim 1 was novel over D3 and D4, because none of them disclosed a sodium content of less than 500 ppm and a Si/Al ratio of 10 or below in combination, and inventive over the prior art on file, because the evidence on file supported the presence of an improvement in thermal stability through the choice of a Si/Al ratio of 10 or below and neither the closest prior art D3 nor the other documents on file gave any suggestion for that effect.

VI. Opponent 2 (appellant) appealed that decision. Opponent 3 (party as of right) also filed an appeal, but withdrew it with letter of 12 May 2011.

VII. In the reply to the statement setting out the grounds of appeal the patent proprietor (respondent) defended the patent in the amended version maintained by the opposition division.

VIII. In a communication sent in preparation of oral proceedings dated 15 November 2012 the Board noted that the only issues raised by the appellant up to then were sufficiency of disclosure and novelty with respect to documents D14 and D5, while the part of the decision relating to the assessment of inventive step had not been contested (point 2 of the communication). In that communication the Board summarised the objections of the appellant and expressed its preliminary opinion without raising any new point.

IX. With letter of 17 December 2012 the respondent filed a new set of claims as an auxiliary request.

- X. In a letter dated 7 February 2013, i.e. one month before the scheduled oral proceedings, the appellant called in question the validity of the priority of the patent in suit in view of the disclosure of US application 09/712210 (cited in the patent in suit and published as US-A-6 689 709, referred to as document D23 in the present decision), which was introduced to show that the claimed priority was not the first application in the sense of Article 87(1) EPC. Consequently the appellant raised an objection of lack of novelty with respect to the claimed priority document, D23 and D4 and an objection of lack of inventive step over D4 as the closest prior art alone or in combination with D3, D5 or D14 or over D3 alone (in this respect reference was made to the arguments in the notice of opposition).
- XI. Oral proceedings were held on 7 March 2013 in the announced absence of the appellant and of the parties as of right.
- XII. The arguments of the appellant (opponent 2), as far as relevant to the present decision, can be summarised as follows:

Sufficiency of disclosure

- (a) The invention was not sufficiently disclosed because the expression "at least a portion of said iron" with reference to the part of iron which was in the form of Fe(OH) was not further specified in claim 1 and it was not clear how the improvement in stability relating to the incorporation of the

extra-framework aluminium oxide was obtained. The skilled person had to determine himself which quantity of iron in the form of Fe(OH) and which Si/Al ratio were really covered by the claim and that amounted to undue burden.

Novelty

- (b) The disclosure of document D14 was novelty destroying for the process of claim 1 as maintained in view of example 4, which made use of a zeolite beta with a sodium content of 200 ppm as given in example 1, and the definition of high silica content on page 2, which included values for the Si/Al ratio which overlapped with the ones of the claim. A steam treatment which resulted in extra-framework alumina chains was also described in that document. Example 1 of document D5 was also novelty destroying for the claimed process, as it disclosed all the process steps, a Si/Al ratio in the desired range and a ion-exchange step, which necessarily resulted in a sodium content below 500 ppm.

The appellant did not take position on the admissibility of the objections filed for the first time with letter of 7 February 2013.

- XIII. The arguments of the respondent (patent proprietor), as far as relevant to the present decision, can be summarised as follows:

Sufficiency of disclosure

- (a) The objections of the appellant under sufficiency of disclosure were indeed objections under Article 84 EPC and the opposition division was correct in rejecting them.

Novelty

- (b) It was not correct to take a specific disclosure of D14 (example 1 with its sodium content) and re-write it by reference to a different disclosure elsewhere in the document (a Si/Al ratio of more than 5 on page 2). As the Si/Al ratio of example 1 was more than 48, that example did not anticipate claim 1, nor did any other disclosure of D14. The disclosure in D5 of a ion-exchange for a batch in zeolite beta could not be used to infer a sodium concentration below 500 ppm, as the sodium content of the resulting zeolite was explicitly given in that document and resulted in 2590 ppm. On that basis novelty over D14 and D5 had to be acknowledged.

Admissibility of the late-filed objections

- (c) The objections filed for the first time with letter of 7 February 2013 resulted in a substantial amendment of the appellant's case and had to be rejected, because they were late filed and because the additional cited documents had not been filed. The same was valid for the objection of lack of inventive step over D3, because that

objection was late filed and not sufficiently substantiated.

XIV. The appellant (opponent 2) requested in writing that the decision under appeal be set aside and the patent be revoked.

XV. The respondent (patent proprietor) requested that the appeal be dismissed or, in the alternative, that the decision under appeal be set aside and the patent be maintained according to the claims of the auxiliary request filed with letter of 17 December 2012.

XVI. The parties as of right (opponents 1 and 3) did not file any request in appeal.

Reasons for the Decision

Sufficiency

1. The Board cannot follow the contention of the appellant that a lack of sufficiency arises from the breadth of the expression "at least a portion of said iron is in the form of Fe(OH)" and from the need to determine specific values of that portion and of the Si/Al ratio which make it possible to obtain the desired stability of the catalyst.

1.1 The breadth of a claim is not in itself a reason for lack of sufficiency. In the present case the fact that the term "at least a portion" is not further specified simply means that "any" portion is covered by the claim,

so that iron in the form Fe(OH) needs to be present without any specific limitation.

- 1.2 There is no evidence from the appellant that the breadth of that expression and of the range for the Si/Al ratio ("of 10 or below") would put the skilled person in the condition of not being able to carry out the claimed method. Moreover, the claim itself does not specify a quantitative result which should be achieved by the claimed process, and simply indicates that the process is meant "for improving stability" without giving any specification of a quantitative improvement, nor indicating any other result.
- 1.3 Under such circumstances, the Board can only conclude that the appellant has not sufficiently substantiated the objection of insufficiency, so that this objection is to be rejected.

Novelty

2. The process of claim 1 as maintained in opposition proceedings has as a starting material "an aluminosilicate zeolite beta having a Si/Al ratio of 10 or below and a reduced sodium content of less than 500 ppm sodium cations" which undergoes a number of treatments to obtain an iron-promoted aluminosilicate zeolite beta catalyst with improved stability. It is a crucial issue for the analysis of novelty over documents D14 and D5 to check whether they directly and unambiguously disclose a zeolite beta with the desired Si/Al ratio and sodium content in combination as a starting material.

- 2.1 Example 4 of document D14 (page 9, third paragraph) discloses by reference to example 2 a treatment with an iron salt ($\text{Fe}(\text{NO}_3)_3$) of a zeolite according to example 1. The zeolite of example 1 contains *inter alia* 79.2% by weight of SiO_2 , 0.72% by weight of Al_2O_3 and 0.02% by weight of sodium. On the basis of those quantities it is clear that the zeolite used in example 4 has a Si/Al ratio largely above 10 and a sodium content well below 500 ppm.
- 2.2 In the general description of D14 reference is made to high silica content zeolites (page 2, last paragraph), wherein the expression "high silica content" means a silica to alumina molar ratio greater than 10 (i.e. Si/Al atomic ratio greater than 5), preferably greater than 30 (i.e. Si/Al atomic ratio greater than 15) and most preferably greater than 100 (i.e. Si/Al atomic ratio greater than 50). No values for the sodium content of the zeolite are given in the general description of D14.
- 2.3 While iron treatment of a zeolite with a value of sodium below 500 ppm is disclosed in a specific example of D14 (example 4 with reference to examples 2 and 1) and the broadest range for the Si/Al ratio in the zeolites mentioned in D14 is partly overlapping with the range 10 or below, neither the examples nor the general description of D14 disclose treatment of a zeolite with the two features in combination. Moreover, there is no indication in D14 that the zeolite of example 1 could be modified by leaving the specific low sodium content and decreasing the Si/Al ratio.

- 2.4 Under such circumstances, novelty of the process of claim 1 as maintained by the opposition division with respect to the disclosure of D14 must be acknowledged already on the basis of those features.
- 2.5 Example 1 of D5 (column 6, line 53 - column 7, line 68) discloses the preparation of a zeolite beta which is used to prepare iron promoted zeolite catalysts according to example 2 (column 8, lines 1 to 35). The zeolite beta to be treated is a mixture of 7.7 kg of zeolite coming from batch 1 and 26.4 kg of zeolite coming from batch 2 (column 7, lines 48 to 50), wherein the zeolites of batch 1 and batch 2 have a $\text{SiO}_2/\text{Al}_2\text{O}_3$ ratio of 17 and 18 respectively (column 7, lines 14 to 16 and 42 to 44), which correspond to a Si/Al ratio of 8.5 and 9 respectively. The mixed zeolite is NH_4^+ ion exchanged and then treated with concentrated HNO_3 (column 7, lines 50 to 60) and has after filtering a Na_2O content of 0.47% by weight.
- 2.6 The zeolite to be iron treated disclosed in example 1 of D5 has therefore a Si/Al ratio below 10, but in spite of the ion exchange treatments its sodium content is well above 500 ppm.
- 2.7 Also with respect to D5 novelty of the process of claim 1 as maintained by the opposition division must be acknowledged already on the basis of the composition of the zeolite beta to be treated.
- 2.8 The process of claim 1 as maintained in opposition proceedings is therefore novel over the disclosures of D14 and D5.

Admissibility of the late-filed objections

3. With letter of 7 February 2013, i.e. four weeks before the scheduled oral proceedings, the appellant put into question for the first time the validity of the priority claim in view of a previously filed US application and derived a number of objections of lack of novelty (with respect to the claimed priority document, to D23 and to D4) and of lack of inventive step (over D4 as the closest prior art alone or in combination with D3, D5 or D14) from its conclusion that the priority was not validly claimed. In addition, it raised an objection of lack of inventive step over D3 alone.

3.1 The objections which follow from an alleged invalidity of the priority claim depend on an issue which was not decided upon in the contested decision and was never raised in appeal, so that they result in an amendment of the appellant's case, which may therefore be admitted into the appeal proceedings only at the Board's discretion according to Article 13 of the Rules of Procedure of the Boards of Appeal (RPBA).

3.2 The appellant did not provide any justification for the late filing of those objections in the letter containing them and decided in addition not to be present at the oral proceedings.

3.3 The Board sees no justification for the late filing, in particular in view of the fact that no new points were raised in the proceedings after the initial submissions of the parties (the statement of grounds and the reply thereto). In this respect, the Board notes that its

communication sent in preparation of the oral proceedings contained a summary of the relevant issues and its preliminary opinion, which were all exclusively based on elements which were already on file.

- 3.4 The alleged lack of validity of the priority claim with the objections deriving from it amounts to a completely fresh case, which would require a new analysis by the Board and by the opposing party with the possible consequence of a remittal to the first instance.
- 3.5 The introduction of these objections at such a late stage of the proceedings would be contrary to the spirit of the appeal proceedings as foreseen in the Rules of Procedure, which prescribe that the statement of grounds and the reply thereto shall contain a party's complete case (Article 12(2) RPBA) and that further amendments of a party's case may be admitted under consideration among others of the current state of the proceedings and of the need for procedural economy (Article 13(1) RPBA).
- 3.6 Under such circumstances, the Board in the exercise of its discretion considers it appropriate not to admit the late-filed objections (lack of validity of the priority claim and the objections deriving from it) into the proceedings.
- 3.7 The objection of lack of inventive step over document D3 is instead an issue which is not related to the validity of the priority claim and which was decided upon in the contested decision (see point V(d), above).

- 3.8 However, the correctness of that part of the decision was not called in question in the statement of grounds and the objection of lack of inventive step over D3 was raised in the letter of 7 February 2013 without any indication as to why the decision of the opposition division should be incorrect in this respect and only with a generic reference in a single sentence to submissions made in the notice of opposition (see letter of the appellant dated 7 February 2013, last sentence on page 5).
- 3.9 The Board considers that that objection, which was raised for the first time in appeal shortly before the scheduled oral proceedings, is likewise an amendment of the appellant's case which is subject to a discretionary decision on its admissibility (Article 13 RPBA).
- 3.10 Also in this case there are no reasons which justify the late filing (see point 3.2, above). Moreover, the failure to indicate any reasons why the contested decision should be incorrect in this respect puts the Board and the respondent in the position of having to make investigations on its own on the subject, which is not the purpose of appeal proceedings.
- 3.11 On that basis the Board in the exercise of its discretion considers it appropriate not to admit the objection of lack of inventive step over document D3 into the proceedings.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar

The Chairman

S. Fabiani

J. Riolo