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**Datasheet for the decision  
of 12 October 2020**

**Case Number:** T 1483/17 - 3.3.06

**Application Number:** 11788621.8

**Publication Number:** 2531297

**IPC:** B01J29/89

**Language of the proceedings:** EN

**Title of invention:**

PROCESS FOR MAKING TITANIUM-MWW ZEOLITE

**Patent Proprietor:**

Lyondell Chemical Technology, L.P.

**Opponent:**

BASF SE

**Headword:**

Ti-MWW Zeolite/Lyondell

**Relevant legal provisions:**

EPC Art. 83

**Keyword:**

Sufficiency of disclosure - Claim interpreted in the light of the description

**Decisions cited:**

T 2221/10, T 1691/11

**Catchword:**



**Beschwerdekammern**

**Boards of Appeal**

**Chambres de recours**

Boards of Appeal of the  
European Patent Office  
Richard-Reitzner-Allee 8  
85540 Haar  
GERMANY  
Tel. +49 (0)89 2399-0  
Fax +49 (0)89 2399-4465

Case Number: T 1483/17 - 3.3.06

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.06**  
**of 12 October 2020**

**Appellant:** Lyondell Chemical Technology, L.P.  
(Patent Proprietor) Two Greenville Crossing  
4001 Kennett Pike, Suite 220  
Greenville, Delaware 19807 (US)

**Representative:** LyondellBasell  
c/o Basell Poliolefine Italia  
Intellectual Property  
P.le Donegani 12  
44122 Ferrara (IT)

**Respondent:** BASF SE  
(Opponent) 67056 Ludwigshafen (DE)

**Representative:** Altmann Stöbel Dick Patentanwälte PartG mbB  
Dudenstrasse 46  
68167 Mannheim (DE)

**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 3 May 2017  
revoking European patent No. 2531297 pursuant to  
Article 101(3) (b) EPC.**

**Composition of the Board:**

**Chairman** J.-M. Schwaller  
**Members:** S. Arrojo  
C. Brandt

## Summary of Facts and Submissions

- I. The appeal filed by the patentee lies against the decision of the opposition division to revoke European patent **No. 2 531 297** for not disclosing the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b) EPC).
- II. With its grounds of appeal the appellant requested *inter alia* to remit the case to the first instance for further prosecution on the basis of the patent as granted. It also filed an amended set of claims as an auxiliary request and requested that the appeal fee be reimbursed for an alleged substantial procedural violation.
- III. **Claim 1** as granted (main request) reads as follows:
- "A process for producing a titanium-MWW zeolite, which comprises:*
- (a) heating a gel formed from a titanium compound, a silicon source, a boron source, an MWW-templating agent, and water at a temperature in the range of 35°C to 75°C for a period of 8 to 30 hours to form a precrystallized gel; and*
- (b) heating the pre-crystallized gel at a temperature in the range of 160°C to 190°C for a period of 5 or more days to form the titanium-MWW zeolite; wherein the MWW-templating agent is piperidine or hexamethyleneimine."*
- IV. With its reply the opponent and respondent requested to dismiss the appeal and not to admit the newly filed

auxiliary request. Additionally, it submitted documents **D5-D6** and experimental reports **E1-E3**.

V. The following documents are relevant for the current decision:

**D5**: Atlas of Zeolite Framework Types, 6. Edition, 2007, page 234

**E1-E3**: Experimental reports.

VI. The Board issued a communication to inform the parties of its preliminary opinion that the invention was sufficiently disclosed in the patent, that no procedural violation had been committed and that the case should be remitted to the first instance for further prosecution.

VII. At the oral proceedings the appellant withdrew its request for reimbursement of the appeal fee.

VIII. At the end of the debate the requests were as follows:

The appellant requested to set aside the decision and to remit the case to the first instance for further prosecution on the basis of the patent as granted or, auxiliary, on the basis of the claims of the auxiliary request filed with its statement of grounds of appeal on 28 August 2017.

The respondent requested to dismiss the appeal.

## Reasons for the Decision

1. Main request - Article 100(b)/83 EPC

1.1 The Board has concluded that the ground under Article 100(b) EPC does not prejudice the maintenance of the patent as granted.

1.2 The respondent and the opposition division considered that the invention was not sufficiently disclosed for the following reasons:

- The expression "*to form the titanium-MWW zeolite*" at the end of step (b) of claim 1 would require the formation of a titanium-MWW zeolite catalyst directly from this step. In view of the results obtained by the opponent when re-working the examples of the patent in suit (see documents E1-E3), it was not possible to obtain this catalyst directly from step b), in particular not without additional steps such as acid contact or calcination.

- While the patent in suit (par. [0020]-[0022] and [0038]-[0040]) disclosed processes including acid contact and calcination, the invention according to the claims did not define these steps.

- The technical meaning of term "*titanium-MWW zeolite*" was clear (see document D5, page 234), so there was no need to interpret it in the light of the description. In this respect, it was established case law that, in case of discrepancy between the claims and the description, a term in the claims which is clear *per se* should not be reinterpreted in the light of the description (T 2221/10, point 33; T 1691/11, points 1.2-1.3).

- In any case, the contested patent did not include any clear definition of the term "*titanium-MWW zeolite*". In particular, when reading the description of the patent (par. [0021]-[0023], [0026], [0032] and [0040]- [0042]) it was apparent that this term was inconsistently used to refer to both an intermediate product and the MWW-zeolite catalyst (i.e. the end product). Therefore, even if the description were consulted, the skilled person would still not conclude that this term necessarily refers to an intermediate product.

- 1.3 The board disagrees with these arguments because an invention (as defined in the claims) is sufficiently disclosed when it can be carried out without undue burden taking into account the information in the patent as a whole.

In the present case (see paragraphs [0018], [0020], [0021], [0022], [0039] and [0040] of the patent), the term "*titanium-MWW zeolite*" clearly refers to the crystallised zeolitic structure obtained from the crystallisation step performed at 160-190°C (i.e. step b) of claim 1). As argued by the respondent, this term is also used in other parts of the patent (e.g. par. [0026], [0032] or [0042]) to refer to the catalyst for the epoxidation of olefins, that is, to the catalyst structure formed when the crystallised zeolite obtained in step b) is exposed to acid contact and calcination steps. However, par. [0021] and [0022] explicitly indicate that "In order to produce an active catalyst for epoxidation, the titanium-MWW zeolite is contacted with an acid..." and "Preferably ... calcined to remove any remaining MWW-templating agent ...".

Reading the above paragraphs, the skilled reader would readily understand that while the patent uses the term

"*titanium-MWW zeolite*" to refer to both the intermediate crystallised zeolite and the end catalyst, the "*titanium-MWW zeolite*" obtained with the step of heating the pre-crystallised gel at 160°C-190°C can only be the intermediate crystallised zeolite and not the final catalyst structure.

The above cited decisions T 2221/10 and T 1691/11 concern cases in which there was a discrepancy between the claims and the description, and in which the technical meaning of the claims was as such clear. By contrast, in the underlying case, step b) in claim 1 is neither in contradiction with the description nor clear, because a person skilled in the art of catalysts would readily recognise that it is not possible to directly obtain an active catalytic framework from a crystallisation step without removing the inactive titanium, the boron and the templating agent. Consequently, it is unclear how the term "*titanium-MWW zeolite*" should be interpreted, and/or whether there are essential steps missing in the claim. Claim 1 is also not in contradiction with the description because, as indicated above, the patent also uses the term "*titanium-MWW zeolite*" to refer to the intermediate zeolitic structure obtained directly from the crystallisation step. The board therefore considers that in the case at issue it is justified to interpret the claim in the light of the description.

The board further notes that Example 1 of the contested patent describes in detail the different steps of the preparation of one specific titanium-MWW zeolite and catalyst. At the oral proceedings, after being questioned by the board, the respondent confirmed that it did not contest that such a titanium-MWW zeolite and catalyst would be obtained as a result of said



preparation process nor that said process could be reproduced.

Thus, once the skilled person realises (in view of the patent as a whole) that the term "*titanium-MWW zeolite*" in claim 1 can only refer to the crystallised solid obtained directly from the crystallisation step b), it is apparent that there is enough information in the patent for carrying out the invention as defined in this claim, for example by reproducing the process in example 1 of the patent (par. [0038]-[0040]).

- 1.4 It follows from the above considerations that the patent discloses the invention in a manner which is sufficiently clear and complete for it to be carried out by a person skilled in the art.
2. Since the issues of novelty and inventive step were not dealt with at the first instance, the board considers that the case should be remitted to the opposition division for further prosecution as requested by the appellant (Articles 111(1) EPC and 11 RPBA).
3. For the sake of completeness the board notes that, in view of the above considerations, the invention as currently defined in the claims does not concern a process for producing an active catalyst, but a process for producing an intermediate product with no catalytic activity. This means, for example, that certain technical effects which only concern the final catalyst, such as the epoxidation activity disclosed in Table 1 of the patent, might not be taken into account when addressing the question of inventive step.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division for further prosecution.

The Registrar:

The Chairman:



A. Pinna

J.-M. Schwaller

Decision electronically authenticated