

**Internal distribution code:**

- (A)  Publication in OJ  
(B)  To Chairmen and Members  
(C)  To Chairmen  
(D)  No distribution

**D E C I S I O N**  
of 10 January 2002

**Case Number:** T 0509/98 - 3.3.3

**Application Number:** 96850103.1

**Publication Number:** 0748823

**IPC:** C08F 10/00

**Language of the proceedings:** EN

**Title of invention:**

Catalyst composition and process for the production of olefinic polymers

**Applicant:**

Nippon Mitsubishi Oil Corporation

**Opponent:**

-

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 84, 111(1), 123

**Keyword:**

"Amendments - substantive"

"Decision re appeals - exercise of discretion, remittal"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 0509/98 - 3.3.3

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.3  
of 10 January 2002

**Appellant:**

Nippon Mitsubishi Oil Corporation  
3-12, Nishi-Shinbashi 1-chome  
Minato-Ku  
Tokyo (JP)

**Representative:**

Modin, Jan  
Ehrner & Delmar Patentbyrå AB  
Box 10316  
SE-100 55 Stockholm (SE)

**Decision under appeal:**

Decision of the Examining Division of the  
European Patent Office posted 17 December 1997  
refusing European patent application  
No. 96 850 103.1 pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** R. Young  
**Members:** A. Däweritz  
U. Tronser

### Summary of Facts and Submissions

I. European patent application No. 96 850 103.1, filed on 29 May 1996, claiming the priorities of 31 May 1995 and 21 September 1995 of four earlier applications in Japan (157098/95, 157099/95, 267849/95, and 267850/95, respectively) and published under No. 0 748 823 on 18 December 1996, was refused by a decision of the Examining Division, issued in writing on 17 December 1997, for violation of Article 123(2) EPC.

The originally filed application contained a set of 10 claims, Claims 1 to 8 relating to a catalyst composition, Claims 9 and 10 concerning processes for the production of olefinic polymers in the presence of catalyst compositions as defined in Claims 2 and 3, respectively. Claim 1 of the application as filed read as follows:

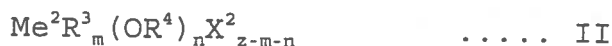
"1. A catalyst composition resulting from mutual contact of:

a compound (A) of the formula



wherein R<sup>1</sup> and R<sup>2</sup> each are a C<sub>1</sub> - C<sub>24</sub> hydrocarbon group, X<sup>1</sup> is a hydrogen or halogen atom, Me<sup>1</sup> is titanium, zirconium or hafnium, p and q are 0 ≤ p ≤ 4, 0 ≤ q ≤ 4 and 0 ≤ p+q ≤ 4;

a compound (B) of the formula



wherein R<sup>3</sup> and R<sup>4</sup> each are a C<sub>1</sub> - C<sub>24</sub> hydrocarbon group, X<sup>2</sup> is a hydrogen or halogen atom, Me<sup>2</sup> is an

element of Groups I - III in the Periodic Table,  $z$  is a valence of  $Me^z$ , and  $m$  and  $n$  are  $0 \leq m \leq z$ ,  $0 \leq n \leq z$  and  $0 < m+n \leq z$ ;

a cyclic compound (C) having two or more conjugated double-bonds; and

a compound (D) of the formula



and/or



wherein  $R^5$  through  $R^{10}$  each are hydrogen or a  $C_1 - C_{24}$  hydrocarbon group."

The catalyst composition of Claim 2 was the result of mutual contact of the above components (A) to (D) and an additional modified organoaluminum compound (E).

The catalyst composition of Claim 3 resulted from the mutual contact the above components (A) to (E) and an inorganic and/or particulate polymer carrier (F).

Claims 4 to 8 defined preferred embodiments relating to the features of one or more of the components (B), (C), (D), (E) and (F).

II. The decision was based on a set of 10 claims received on 25 November 1997 in reply to a first communication dated 20 May 1997 wherein novelty objections had been raised with regard to

D1: EP-A-0 546 690,

D2: EP-A-0 463 809 and

D3: EP-A-0 569 249

and a second communication dated 9 October 1997 inviting the applicant to demonstrate that the new wording of the claims complied with the requirements of Article 123(2) EPC. In this latter communication, the Examining Division indicated that the further consideration of the questions of novelty and inventive step would not be continued before the above issue was settled (point 3).

In each one of newly filed Claims 1 to 3, 9 and 10, the definitions of groups R<sup>5</sup> through R<sup>10</sup> had been replaced by the following wording:

"wherein R<sup>5</sup> through R<sup>8</sup> each are hydrogen or a C<sub>1</sub> - C<sub>24</sub> hydrocarbon group, provided that at least two of R<sup>5</sup> through R<sup>8</sup> are a C<sub>1</sub> - C<sub>24</sub> hydrocarbon group and wherein R<sup>9</sup> and R<sup>10</sup> are each a C<sub>1</sub> - C<sub>24</sub> hydrocarbon group."

The Examining Division held that this amendment violated the requirements of Article 123(2) EPC. Further points to be examined were not taken into consideration (point 4 of the decision).

III. On 11 February 1998, a Notice of Appeal against the above decision was lodged by the Appellant (Applicant). The prescribed fee was paid on the same date.

In the Statement of Grounds of Appeal, submitted on 20 April 1998, the Appellant requested that the above decision be set aside and the case be remitted to the Examining Division for further examination on the basis of two new sets of claims (main and auxiliary

requests). In an auxiliary motion, it requested oral proceedings to be held if the Board intended to dismiss the appeal.

The Appellant argued essentially that each of R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup> and R<sup>10</sup> individually represented hydrogen or a C<sub>1</sub> - C<sub>24</sub> hydrocarbon group. The separation of the definitions into two groups in accordance with the formulae III and IV, with deletion of hydrogen from the definition of the symbols of the latter group, would therefore not result in an extension of the subject-matter of the application and, hence, could not violate Article 123(2) EPC.

It continued that the amendments were made in order to restrict the claims to compounds stated in the description to be particularly preferred examples (page 44, lines 6 to 10). The restriction was said to be further supported by the passage on from page 41, line 18 to page 42, line 27 referring to compounds wherein at least two of the symbols R<sup>5</sup> to R<sup>8</sup> were C<sub>1</sub> - C<sub>24</sub> hydrocarbon groups.

- IV. A consultation by telephone with the Representative of the Appellant on 7 May 2001 focused exclusively on the questions at issue under Article 123(2) and 84 EPC. In particular, it was pointed out by the Rapporteur that the wording of the suggested claims included information which was not originally disclosed. In reply to the above conversation, new claims were filed.

After a written communication dated 26 July 2001, the Appellant requested in a letter dated 4 December 2001 that the application be accepted on the basis of a set of Claims 1 to 9 submitted therewith.

The claims read:

"1. A catalyst composition resulting from mutual contact of:

a compound (A) of the formula



wherein R<sup>1</sup> and R<sup>2</sup> each are a C<sub>1</sub> - C<sub>24</sub> hydrocarbon group, X<sup>1</sup> is a hydrogen or halogen atom, Me<sup>1</sup> is titanium, zirconium or hafnium, p and q are 0 ≤ p ≤ 4, 0 ≤ q ≤ 4 and 0 ≤ p+q ≤ 4;

a compound (B) of the formula



wherein R<sup>3</sup> and R<sup>4</sup> each are a C<sub>1</sub> - C<sub>24</sub> hydrocarbon group, X<sup>2</sup> is a hydrogen or halogen atom, Me<sup>2</sup> is an element of Groups I - III in the Periodic Table, z is a valence of Me<sup>2</sup>, and m and n are 0 ≤ m ≤ z, 0 ≤ n ≤ z and 0 < m+n ≤ z;

a compound (C) being a cyclic compound having two or more conjugated double-bonds; and

a compound (D) being selected from inner olefins, branched olefins, inner alkynes and aryl alkynes and having the formula



and/or



wherein R<sup>5</sup> through R<sup>10</sup> individually represent hydrogen or a C<sub>1</sub> - C<sub>24</sub> hydrocarbon group.

2. A catalyst composition resulting from mutual contact of the compounds A-D defined in Claim 1 and a modified organoaluminum compound (E) having Al-O-Al bonds derived from the reaction of an organoaluminum compound with water, said organoaluminum compound being of the formula



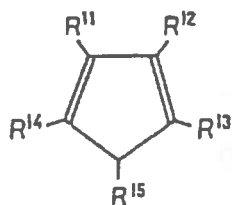
wherein R<sup>17</sup> is a hydrocarbon group such as an alkyl, alkenyl, aryl and aralkyl group of 1 to 18 carbon atoms, X<sup>7</sup> is a halogen or hydrogen atom, and c is an integer of 1 ≤ c ≤ 3.

3. A catalyst composition resulting from mutual contact of the compound [read: compounds] A-E defined in Claim 2 and

an inorganic and/or particulate polymer carrier (F), said inorganic carrier being formed from a porous inorganic compound of the group consisting of a carbonaceous material, metal, metal oxide, metal chloride, metal carbonate and mixtures thereof, and having a maximum length of 5 - 200 μm, a surface area of 50 - 1,000 m<sup>2</sup>/g and a pore volume of 0.05 - 3 cm<sup>3</sup>/g, and said particulate polymer carrier being formed from a thermoplastic or thermosetting resin having an average particle size of 5 - 2,000 μm.

4. A catalyst composition according to claim 1 wherein said cyclic compound (C) is represented by the formula





.....V

where R<sup>11</sup> through R<sup>15</sup> each are hydrogen or a C<sub>1</sub> - C<sub>10</sub> hydrocarbon group, any two of these hydrocarbon groups jointly forming a conjugated double-bond-containing ring.

5. A catalyst composition according to Claim 1 wherein each of said compounds (B) and (C) is used in an amount of from 0.01 to 1,000 mols per mol of said compound (A).
6. A catalyst composition according to Claim 1 wherein said compound (D) is used in an amount of from 0.01 to 100 mols per mol of said compound (A).
7. A catalyst composition according to Claim 2 wherein said compound (E) is used in an amount of from 0.1 to 100,000 by the atomic ratio of aluminum in said compound (E) to transition metal Me<sup>1</sup> in said compound (A).
8. A catalyst composition according to Claim 3 wherein said compound (F) is used in an amount of 1 gram per 0.0001 to 5 millimols of said compound (A).
9. A process for the production of olefinic polymers in the presence of a catalyst composition according to any one of Claims 2 to 8."

V. The Appellant requested that the application be accepted on the basis of the set of claims submitted by letter of 4 December 2001. This request is interpreted by the Board as a request that the decision under appeal be set aside and that a patent be granted on the basis of the said claims.

## Reasons for the Decision

1. The appeal is admissible.
2. *Wording of the claims*

### *Article 123(2) EPC*

- 2.1 The decision under appeal was based on the sole ground that Claims 1 to 3, 9 and 10 as received on 25 November 1997 violated the requirements of Article 123(2) EPC. The reason for this judgement was that the amended definition of the groups  $R^5$  to  $R^{10}$  in formulae III and IV of these claims had no basis in the application as originally filed.
- 2.2 In the present wording of Claim 1, the definitions of cyclic compound (C) and compound (D) have been amended. The first amendment in the definition of compound (C) is of purely editorial nature. The new definition of compound (D) is supported by page 44, lines 6 to 8 of the application as filed.

The editorial replacement of "each are" by "individually represent" brings the joint definition of  $R^5$  to  $R^{10}$  better in line with the original disclosure on from page 40, line 13 to page 44, line 13.

- 2.3 Since Claim 1 has been silent about compound (E) and carrier (F), the reference to this claim in each of Claims 7 and 8 is now replaced by a reference to Claims 2 and 3, respectively, which concern these additional components (see section IV, above).

- 2.4 It follows that all the objections under Article 123(2) EPC as raised in the reasons for the decision under appeal have been met. Therefore the decision under appeal cannot be upheld.

*Article 84 EPC*

- 2.5 The purely editorial amendments of the first lines of Claims 2, 3 and 9 have introduced references to preceding claims making lengthy repetitions of definitions redundant. The new set of claims is concise as required in Article 84 EPC.

- 2.6 The Board is satisfied that the present wording of the claims is clear.

3. *Further requirements of the EPC*

- 3.1 From both the communication dated 9 October 1997 (point 3) and the statement under point 4 of the decision under appeal, which indicates that discussion of novelty and inventive step as well as unity, sufficiency of disclosure and clarity may still be necessary, it is evident that the examination has not yet been completed by the Examining Division. Moreover, these further issues have not been considered in these appeal proceedings either.

- 3.2 Therefore, the Board decides in accordance with Article 111(1) EPC to remit the case back to the Examining Division for further examination as requested by the Appellant in the Statement of Grounds of Appeal dated 20 April 1998 (bottom of page 3).

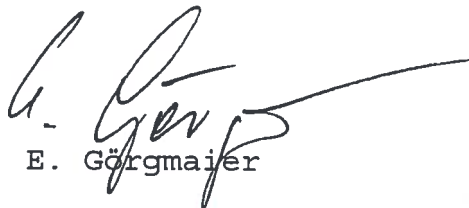
4. Since no decision adverse to the Appellant and its right to be heard is made, the auxiliary request for oral proceedings need not be considered, in line with established jurisprudence (see Case Law, 3<sup>rd</sup> edition, 1999, chapter VI. C. 3.4, page 265).

### Order

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

1. The decision under appeal is set aside.
2. The case is remitted to the Examining Division for further examination on the basis of the claims submitted by letter of 4 December 2001.

The Registrar:



E. Görgmaier

The Chairman:



R. Young