BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [X] To Chairmen
(D) [ ] No distribution

D E C I S I O N
of 11 September 2001

Case Number: T 1217/97 - 3.3.1

Application Number: 92200516.0

Publication Number: 0501577

IPC: C07C 5/27

Language of the proceedings: EN

Title of invention:
Process for the conversion of a feedstock comprising linear olefins

Patentee:
SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V.

Opponent:
Mobil Oil Corporation

Headword:
Branched olefins/SHELL

Relevant legal provisions:
EPC Art. 123(2), 54(1)(2), 111(1)

Keyword:
"Main request, first to sixth and eighth to tenth auxiliary requests - support in the application as filed (no); seventh auxiliary request - claim not novel"
"Remittal to first instance (no)"

Decisions cited:
G 0003/89, T 0170/87, T 0917/94, T 0863/96

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1217/97 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 11 September 2001

Appellant: (Proprietor of the patent)
SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V.
Carel van Bylandtlaan 30
NL-2596 HR Den Haag (NL)

Representative:
-

Respondent: (Opponent)
Mobil Oil Corporation
3225 Gallows Road
US-Fairfax
Virginia 22037-0001 (US)

Representative:
Cooper, John Anthony
Kador & Partner
Corneliusstrasse 15
D-80469 München (DE)

Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 8 October 1997 revoking European patent No. 0 501 577 pursuant to Article 102(1) EPC.

Composition of the Board:

Chairman: A. J. Nuss
Members: P. F. Ranguis
J. P. B. Seitz

Summary of Facts and Submissions

I. The Appellant (Proprietor of the patent) lodged an appeal against the interlocutory decision of the Opposition Division to revoke the European patent No. 0 501 577 (European patent application No. 92 200 516.0) on the ground that the patent in the form as amended during opposition proceedings according to the then pending main request, first and second auxiliary requests did not comply with the requirements of Article 123(2) EPC.

II. The opposition to the patent in suit was based *inter alia* on the ground that the claimed subject matter lacked novelty (Article 100a) EPC). It was supported by six documents, i.e:

(1) EP-A-26 041

(2) EP-A-55 529

(3) US-A-4 046 859

(4) US-A-3 992 466

(5) US-A-4 150 062

(6) EP-A-37 671

III. The Opposition Division held that the features:

- "containing at least 4 carbon atoms" and "of the same carbon number" present in Claim 1 of the main request,

- "between 4 and 20 carbon atoms" and "of the same carbon number" present in Claim 1 of the first auxiliary request,

- "of the same carbon number" present in Claim 1 of the second auxiliary request,

resulted in the patent being amended in such a way that it contained subject matter which extended beyond the content of the application as filed.

IV. With the Statement of Grounds of Appeal, the Appellant filed five requests replacing those on which the contested decision was based and, in response to the communication of the Board four additional requests and in the course of the oral proceedings which took place on 11 September 2001 two additional requests, Claims 1 of each request reading as follows:

Main request

"1. Process for the conversion of a feedstock comprising linear olefins other than 1,3-butadiene into a product enriched in branched olefins, which process comprises contacting the feedstock with a tectometallosilicate having a ferrierite crystal structure, at a temperature between 150 and 450°C, an olefin partial pressure of more than 0.5 bar and a total pressure of between 0.5 and 25 bar, with the proviso that the process is not propylene olefination."

First auxiliary request

"1. Process for the conversion of a feedstock comprising linear olefins other into a product enriched

in branched olefins, which process comprises contacting the feedstock with a tectometallosilicate having a ferrierite crystal structure, at a temperature between 150 and 450°C, an olefin partial pressure of more than 0.5 bar and a total pressure of between 0.5 and 25 bar, which is other than the conversion of propylene or 1,3-butadiene into compounds having a higher carbon number."

Second auxiliary request

"1. Process for the conversion of a feedstock comprising linear olefins other than 1,3-butadiene into a product enriched in branched olefins, which process comprises contacting the feedstock with a tectometallosilicate having a ferrierite crystal structure, at a temperature between 150 and 450°C, an olefin partial pressure of more than 0.5 bar and a total pressure of between 0.5 and 25 bar, with the proviso that the process is not a combination of operations applied to propylene as olefin feedstock including cracking, polymerisation or dimerization and modification of the olefin feed chain length."

Third auxiliary request

"1. Process for the conversion of a feedstock comprising linear olefins into a product enriched in branched olefins, which process comprises contacting the feedstock with a tectometallosilicate having a ferrierite crystal structure, at a temperature between 150 and 450°C, an olefin partial pressure of more than 0.5 bar and a total pressure of between 0.5 and 25 bar, with the proviso that the process is not a combination of operations applied to propylene as olefin feedstock

including cracking, polymerisation or dimerization and modification of the olefin feed chain length."

Fourth auxiliary request

"1. Process for the conversion of a feedstock comprising linear olefins containing between 4 and 20 carbon atoms, other than 1,3-butadiene, into a product enriched in branched olefins, which process comprises contacting the feedstock with a tectometallosilicate having a ferrierite crystal structure, at a temperature between 150 and 450°C, an olefin partial pressure of more than 0.5 bar and a total pressure of between 0.5 and 25 bar."

Fifth auxiliary request

"1. Process for the conversion of a feedstock comprising linear olefins containing between 4 and 20 carbon atoms into a product enriched in branched olefins, which process comprises contacting the feedstock with a tectometallosilicate having a ferrierite crystal structure, at a temperature between 150 and 450°C, an olefin partial pressure of more than 0.5 bar and a total pressure of between 0.5 and 25 bar."

Sixth auxiliary request

"1. Process for the conversion of a feedstock comprising linear olefins containing between 4 and 10 carbon atoms other than 1,3-butadiene, into a product enriched in branched olefins, which process comprises contacting the feedstock with a tectometallosilicate

having a ferrierite crystal structure, at a temperature between 150 and 450°C, an olefin partial pressure of more than 0.5 bar and a total pressure of between 0.5 and 25 bar."

Seventh auxiliary request

"1. Process for the conversion of a feedstock comprising linear olefins containing between 4 and 10 carbon atoms into a product enriched in branched olefins, which process comprises contacting the feedstock with a tectometallosilicate having a ferrierite crystal structure, at a temperature between 150 and 450°C, an olefin partial pressure of more than 0.5 bar and a total pressure of between 0.5 and 25 bar."

Eighth auxiliary request

"1. Process for the conversion of a feedstock comprising n-butene into a product enriched in isobutene or a feedstock comprising n-pentene into a product enriched in isopentene, which process comprises contacting the feedstock with a tectometallosilicate having a ferrierite crystal structure, at a temperature between 150 and 450°C, an olefin partial pressure of more than 0.5 bar and a total pressure of between 0.5 and 25 bar."

Ninth auxiliary request

"1. Process for the conversion of a feedstock comprising predominantly n-butene or a feedstock comprising predominantly n-pentene into a product

enriched in branched olefins, which process comprises contacting the feedstock with a tectometallosilicate having a ferrierite crystal structure, at a temperature between 150 and 450°C, an olefin partial pressure of more than 0.5 bar and a total pressure of between 0.5 and 25 bar."

Tenth auxiliary request

"1. Process for the conversion of a (a) feedstock comprising at least 99.42% by weight of n-butene or (b) a feedstock comprising at least 97.75% by weight of n-pentene into a product enriched in branched olefins, which process comprises contacting the feedstock (a) or (b) with a ferrierite in the hydrogen form which in the case of feedstock (a) has a silicon to aluminium atomic ratio of 9:1 or 36:1, and in the case of feedstock (b) has a silicon to aluminium atomic ratio of 9:1, at a temperature of 350°C, and in the case of a feedstock (a) an olefin partial pressure of 1.4 bar and a total pressure of 1.4 bar, or, in the case of feedstock (b) an olefin partial pressure of 1.1 bar and a total pressure of 1.1 bar."

V. The Appellant's submissions both in the written proceedings and at the oral proceedings can be summarised as follows:

- Regarding the main, first to fourth and sixth auxiliary requests, processes which operated under the same conditions as the claimed process, but because of the nature of the feedstock, namely 1,3-butadiene and/or propylene, did not give branched olefins of the same carbon number as the linear olefin reactants, were disclosed in

documents (1) to (6). It was, therefore, justified to disclaim those processes from the claims since those disclosures had to be considered as accidental disclosure. Indeed, the process according to the patent in suit distinguished from those documents in that it yielded branched olefins of the same carbon number as the linear olefin reactant.

- Regarding the fifth auxiliary request, the limitation "between 4 and 20 carbon atoms" was supported by the description of the application as filed on page 4, lines 8 to 11. Furthermore, the additional data submitted with the Statement of Grounds of Appeal showed that the process could be applied to linear olefins with a carbon number of between 4 and 20 and that it gave with high selectivity a branched olefin of the same carbon number.

- Regarding the seventh auxiliary request, it resulted from the combination of Claims 1 and 2 of the patent as granted. As novelty and inventive step had not been considered by the first instance, it was proper to remit the case to the opposition Division for further prosecution.

- Regarding the eighth auxiliary request, the examples Nos. 5 and 6 in combination with the description (cf. page 4, lines 18 to 19) of the application as filed, supported the claimed subject matter.

- Regarding the ninth and tenth auxiliary requests, the features "predominantly" and "at least

99.42%...or at least 97.75%..." respectively, were implicitly disclosed in view of the examples Nos. 5 and 6.

VI. The Respondent's submissions both in the written proceedings and at the oral proceedings can be summarised as follows:

- None of the requests, except the seventh request, met the requirements of Article 123(2) EPC.

- Furthermore, all the requests were devoid of novelty in view of documents (1) and (2).

VII. The Appellant requested that the decision under appeal be set aside and that the case be remitted to the first instance for consideration of novelty and inventive step with the set of Claims 1 to 10 filed as main request with the Statement of Grounds of Appeal, or on the basis of one of the first to tenth auxiliary requests on file.

The Respondent requested that the appeal be dismissed, or, as an auxiliary request, that the case be remitted to the first instance for further prosecution.

Reasons for the decision

1. The appeal is admissible.

Main, first to fourth and sixth auxiliary requests

2. *Amendments of Claims 1 - Article 123(2) EPC*

2.1 Claim 1 of each request contains a feature aimed at excluding a process for the conversion of a feedstock comprising 1,3-butadiene and/or propylene. The Board observes that this amendment has no basis in the application as filed, and this was eventually conceded by the Appellant.

2.2 According to the established jurisprudence of the Boards of Appeal, it may be permissible to exclude a specific prior art from the claimed subject-matter by means of a disclaimer, even if the original application provides no basis for such an exclusion (see decisions T 170/87, OJ EPO 1989, 441, point 8.4.1 of the reasons). However, a disclaimer may only be introduced into a claim if, by this amendment, the anticipating disclosure disappears from the prior art field to be taken in consideration (T 863/96, point 3.2 of the reasons).

2.3 The Appellant argued, in particular, that the subject matter of Claims 1 of each request was novel over any one of documents (1) to (6) by virtue of the disclaimer now present.

2.4 Document (1) discloses a particular restructuring or rearrangement of the wide olefin composition stream (C_2 to C_{10} olefins) to provide high yields of tertiary C_4 and C_5 olefin components. The restructuring of the broad carbon chain olefin charge stream produces a mixture of C_4 to C_7 olefins, preferentially with the major portion being C_4 and C_5 olefins comprising a high percentage of tertiary olefins such as isobutylene and isoamylenes (cf. page 2, lines 2 to 19). This process involves the use of catalysts such as ZSM-35 and ZSM-38, the same

catalysts as those mentioned in the patent in suit (cf. page 3, lines 18 to 19). This document aims not only at the same objective as that of the patent in suit but even at the same technical problem (cf. in particular page 2, lines 3 to 4 and lines 11 to 12 of the patent in suit).

2.5 Therefore, even if the disclaimer in Claims 1 of each request imparted novelty to the claimed subject-matter, the Board would still have to consider this citation when assessing inventive step of the remainder, since this document discloses a prior art in the same technical field. Thus, the circumstances of this case are not those very exceptional ones in which particular prior art accidentally anticipates claimed subject-matter without otherwise having a bearing on the patentability of the latter (cf. T 917/94, point 4 of the reasons).

For the above reasons, the amendment of the respective Claims 1 by incorporation of the said disclaimers is not in compliance with the requirements of Article 123(2) EPC.

2.6 Therefore, the main request, the first to fourth and sixth auxiliary requests must fail.

Fifth auxiliary request

3. *Amendment of Claim 1* - Article 123(2) EPC

3.1 The Appellant argued that the incorporation of the feature "a feedstock comprising linear olefins containing between 4 and 20 carbon atoms" was supported by the application as filed on page 4, lines 8 to 12

which read:

"The feedstock which is to be used in the present invention comprises linear olefins, suitably linear olefins containing between 4 and 10 carbon atoms. Higher olefins, e.g. olefins comprising up to 20 carbon atoms...can be present in the feedstock".

3.2 Article 123(2) EPC requires that a European patent application (or a European patent) may not be amended in such a way that it contains subject-matter extending beyond the content of the application as filed. The term "content of the application" relates to the parts of a European patent application which determine the disclosure of the invention, in particular, the description and the claims. In assessing whether an amendment complies with Article 123(2) EPC, what matters is what a skilled person would have objectively derived from the description and claims as originally filed (see G 3/89, OJ EPO 1993, 117, points 1.4. and 2 of the reasons for the decision).

3.3 In the present case, the Board observes that it may be derived from the application as filed that higher olefins, e.g. olefins comprising up to 20 carbon atoms can be present in the feedstock **in addition to** linear olefins containing between 4 and 10 carbon atoms. It is the Board's conclusion that the proposed amendment amounts to an inadmissible extension of the subject matter of the application as filed since it encompasses, for instance, embodiments where **only** linear olefins from C_{11} to C_{20} would be involved, what is not in line with the disclosure of the application as filed. Furthermore, the additional experiments submitted by the Appellant with the Statement of

Grounds of Appeal are not part of the content of the application as filed and must be disregarded for the purpose of examination under Article 123(2) EPC. The subject matter of Claim 1 of the fifth request is therefore, not directly and unambiguously derivable from the content of the application as filed.

3.4 For the above reasons, the fifth request must fail for non compliance with the requirements of Article 123(2) EPC.

Seventh auxiliary request

4. *Novelty - Article 54(1)(2) EPC*

4.1 Claim 1 of the request differs from Claim 1 of the sixth auxiliary request in that the feature "other than 1,3-butadiene" was drawn out and corresponds in fact to the subject matter of the Claim 2 as granted. This request must fail for the following reasons:

4.2 The Board observes that the Appellant declared that Claim 1 of the sixth auxiliary request (corresponding to the third auxiliary request filed with the Statement of Grounds of Appeal) was novel over any of the documents (1) to (6) **by virtue of the disclaimer now present** (cf. points 2.1.1, 2.2.2, 3.1 and 3.2 of the Statement of Grounds of Appeal), acknowledging *a contrario* that without the disclaimer the Claim 1 of the sixth request was not novel. Furthermore, the Board observes that this lack of novelty is without contest established in view of example No. 21 of document (2) which discloses the conversion of 1,3-butadiene. The fact that at the oral proceedings before the Board, the Appellant was not ready to acknowledge that, without

disclaimer, Claim 1 of the seventh auxiliary request lacked novelty does not alter that finding.

4.3 Now, submitting a Claim 1 which indeed complies with the requirements of Article 123(2) EPC but which is clearly not novel over the cited prior art, and requesting that the case be remitted to the first instance since the Opposition Division had revoked the patent under Article 123(2) EPC, cannot be regarded by the Board as serving any useful purpose. The Board exercising, therefore, the power provided by Article 111(1) EPC, which states that the Board may exercise any power within the competence of the department which was responsible for the decision appealed or remit the case to that department for further prosecution, refuses this request for lack of novelty of Claim 1. Article 111(1) EPC does not guarantee the parties any right to have all the issues in the case considered by two instances. Rather, this is a matter of discretion which is left to the Board of Appeal.

Eighth auxiliary request

5. *Amendment of Claim 1* - Article 123(2) EPC

5.1 Claim 1 was amended to specify that n-butene was converted into a product enriched in isobutene and n-pentene was converted into a product enriched in isopentene. The Appellant argued that Claim 1 was supported by the examples Nos. 5 and 6 in combination with the general description of the application as filed, the gist of which was the selective conversion of linear olefins to branched olefins of the same carbon number.

5.2 Article 123(2) EPC requires that a European patent application (or a European patent) may not be amended in such a way that it contains subject-matter extending beyond the content of the application as filed (cf. point 3.2 above).

5.3 First, the Board does not share the Appellant's submission regarding the definition of the invention. Contrary to the Appellant's view, the gist of the invention as it appears in the content of the application as filed is not a process which enables the highly specific and selective conversion of linear olefins to branched olefins **of the same carbon number**. The invention such as disclosed in the application as filed relates to the conversion of a feedstock comprising linear olefins, preferably linear olefins containing 4 or 5 carbon atoms, into a product enriched in branched olefins (cf. page 2, lines 17 to 19 and page 4, lines 18 to 19). This definition of the invention includes not only internal rearrangement of the olefins concerned **but also** reaction between olefins. Indeed, the term "linear olefins" encompasses propylene, as evidenced by the feature excluding propylene in the previous requests. Propylene cannot yield branched olefins without dimerization or oligomerization. The process according to the invention as defined in the application as filed encompasses, therefore, depending of the type of catalyst, the different parameters such as temperature, olefins partial pressure, total pressure, a conversion into a product enriched in branched olefin(s), not necessarily having the same number of carbon atoms than the starting linear olefin feedstock. In the absence of support in the application as filed for that amendment, the Board must conclude that the requirement related to

the same carbon number is formulated without a proper basis therefore. The Board observes, incidently, that the inclusion of this feature caused the revocation under Article 123(2) EPC.

5.4 In view of the above, it cannot be derived from the fact that, for a specific catalyst and specific temperature and pressure, the experimental results disclosed in examples Nos. 5 and 6 yield isobutene and isopentene respectively, that this will be the case for all the embodiments within the scope of Claim 1 because this is at variance with the disclosure of the application as filed (cf. point 5.3 above). Consequently, the examples Nos. 5 and 6 are not representative of the definition of the invention but only disclose specific embodiments which cannot be generalised to the whole scope of Claim 1. In conclusion, Claim 1 extends beyond the content of the application as filed.

5.5 For the above reasons, the eighth request must fail for non-compliance with the requirement of Article 123(2) EPC.

Ninth auxiliary request

6. *Amendment of Claim 1* - Article 123(2) EPC

6.1 The added feature "predominantly" introduces a requirement neither found in the application as filed nor derivable therefrom. The Board does not contest that the feedstock obtained in examples Nos. 5 and 6 comprise predominantly n-butene and n-pentene, i.e. 99.42% and 97.75% respectively. However, there is no unequivocal correspondence between the indicated

amounts and the term "predominantly" which can be applied to many other values. Furthermore, the term "comprise" in the application as filed (cf. page 4, lines 18 to 19) is of no significance in that respect. Consequently, the feature "predominantly" cannot be directly and unambiguously derived from the application as filed.

6.2 For the above reasons, the ninth request must fail for non-compliance with the requirement of Article 123(2) EPC.

Tenth auxiliary request

7. *Amendment of Claim 1* - Article 123(2) EPC

7.1 The added features "at least 99.42% by weight of n-butene" and "at least 97.75% by weight of n-pentene" are drawn from the compositions of the feedstock used in examples Nos. 5 and 6 respectively. Those compositions are as follows:

Example No.5 (% by weight)		Example No.6 (% by weight)	
n-butene	99.42	n-pentene	97.75
iso-butene	0.44	iso-pentene	1.08
butane	0.14	pentane	1.17

From this data, in combination with the other information contained in the application as filed, the added features cannot be derived directly and unambiguously because there is no disclosure which would indicate preferring the range above those values rather than the range below those values. The term "comprise" in the application as filed (cf. page 4,

lines 18 to 19) is indeed of no significance in that respect either.

7.2 For the above reasons, the tenth request must fail for non-compliance with the requirement of Article 123(2) EPC.

8. In view of the above, none of the requests meets the requirements of the EPC.

order

for these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

N. Maslin A. Nuss