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

Datasheet for the decision of 24 July 2008

Case Number: T 0225/05 - 3.3.10

Application Number: 96922116.7

Publication Number: 0835234

IPC: C07C 1/04

Language of the proceedings: EN

Title of invention:
Process for producing oxygenated products

Patentee:
Sasol Technology (Proprietary) Limited

Opponent:
BASF SE
ExxonMobil Chemical Patents Inc.
Shell Internationale Research Maatschappij B.V.

Headword:
Process for producing oxygenated products/SASOL

Relevant legal provisions:
EPC Art. 123(2)

Keyword:
"Added subject-matter (yes) - inadmissible generalisation of a feature by deletion of another feature, both features being only disclosed in combination in the application as filed"

Decisions cited:
T 0789/89

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0225/05 - 3.3.10

D E C I S I O N
of the Technical Board of Appeal 3.3.10
of 24 July 2008

Appellant: (Patent Proprietor)	Sasol Technology (Proprietary) Limited 1 Sturdee Avenue Rosebank 2196 Johannesburg Transvaal (ZA)
Representative:	Kador, Ulrich Kador & Partner Corneliusstrasse 15 D-80469 München (DE)
Respondent: (Opponent 1)	BASF SE -Patentabteilung - C6- Carl-Bosch-Strasse 38 D-67056 Ludwigshafen (DE)
Representative:	-
Former Opponent 2	ExxonMobil Chemical Patents Inc. 5200 Bayway Drive Baytown TX 77522-2149 (US)
Representative:	Janssen, Bernd Christian Uexküll & Stolberg Patentanwälte Beselerstrasse 4 D-22607 Hamburg (DE)

Former opponent 3

Shell Internationale Research Maatschappij B.V.
Carel van Bylandtlaan 16
NL-2596 HR The Hague (NL)

Representative:

McKinney, Victoria
Shell International Limited
Intellectual Property Services
P.O. Box 662
London SE1 7NE (GB)

Decision under appeal:

Decision of the Opposition Division of the European Patent Office posted 21 December 2004 revoking European patent No. 0835234 pursuant to Article 102(1) EPC 1973.

Composition of the Board:

Chairman: R. Freimuth
Members: J.-C. Schmid
J.-P. Seitz

Summary of Facts and Submissions

I. The Appellant (Proprietor of the patent) lodged an appeal on 16 February 2005 against the decision of the Opposition Division posted on 21 December 2004 revoking European patent No. 835 234 and on 20 April 2005 filed a written statement setting out the grounds of appeal.

II. Notices of opposition were filed against the granted patent by three opponents requesting revocation of the patent in suit in its entirety on the grounds of lack of novelty and inventive step (Article 100(a) EPC), of insufficient disclosure (Article 100(b) EPC), and of extending the subject-matter of the patent in suit beyond the content of the application as filed (Article 100(c) EPC). The oppositions of Opponents (2) and (3) have been withdrawn during the appeal proceedings with the letters dated 25 June 2008 and 15 January 2008, respectively.

III. As regards the ground for opposition pursuant to Article 100(c) EPC concerning the amendment comprised in granted claim 22, i.e. deleting the phrase "when predominantly linear oxygenated hydroformylation products are required" in claim 20 as filed, the Opposition Division held that the use of phosphine and/or phosphite ligand modified rhodium, cobalt or ruthenium homogeneous catalysts inherently resulted in predominantly linear oxygenated hydroformylation products being produced so that said phrase was redundant and hence its omission could not contravene Article 123(2) EPC.

The Opposition Division based the revocation of the patent-in-suit on the ground that claim 14 of the then pending main request contained subject-matter extending beyond the content of the application as filed, that the subject-matter of claims 1, 2 and 10 of the then pending main request was not novel and that the subject-matter of claims 1, 2 and 9 of the then pending auxiliary request 1 was not inventive.

IV. In a communication dated 13 February 2008, the Board indicated *inter alia* that according to the wording of page 9, lines 13 to 21 of the application as filed and of original claim 20, the hydroformylation catalyst to be specifically a phosphine and/or phosphite ligand modified rhodium, cobalt or ruthenium homogeneous catalyst in the claimed process appeared to be originally disclosed only in combination with another feature.

V. At the oral proceedings before the Board, held on 24 July 2008, the Appellant withdrew its former request for reimbursement of the appeal fee and defended the maintenance of the patent in suit in amended form on the basis of main requests A and B filed during the oral proceedings before the Board, auxiliary requests 1A, 1B, 1D, 1E, 2A, 2B, 2D, 2E, 3A, 3B, 3D, 3E, 4A, 4B, 4D, 4E filed by *fac simile* on 22 July 2008 and auxiliary request 5A and 5B file on 24 April 2008, and thus superseding any previous requests.

The main request A comprised one single claim which read as follows:

"1. A process for producing oxygenated products from an olefin-rich feedstock, which process comprises reacting, in a hydroformylation stage, a Fischer-Tropsch derived olefinic product comprising linear olefins and mono-methyl alpha olefins, with the methyl groups being located at any position along the alpha olefin molecules linear backbone obtained by subjecting a synthesis gas comprising carbon monoxide (CO) and hydrogen (H_2) to Fischer-Tropsch reaction conditions in the presence of an iron based, a cobalt based or an iron/cobalt based Fischer-Tropsch catalyst to obtain said Fischer-Tropsch derived olefinic product, with carbon monoxide and hydrogen in the presence of a catalytically effective quantity of a homogeneous phosphine and/or phosphite ligand modified rhodium cobalt or ruthenium hydroformylation catalyst and under hydroformylation reaction conditions, to produce oxygenated products comprising aldehydes and/or primary alcohols."

The claim of the main request B differed from the claim of main request A only in that the term "aldehydes" was amended into "primary aldehydes".

Independent claim 1 of auxiliary request 1A read as follows:

"1. A process for producing oxygenated products, which process comprises

subjecting, in a Fischer-Tropsch reaction stage, a synthesis gas comprising carbon monoxide (CO) and hydrogen (H_2) to Fischer-Tropsch reaction conditions in the presence of an iron based, a cobalt based or an

iron/cobalt based Fischer-Tropsch catalyst, to obtain an olefinic product containing linear olefins and mono-methyl alpha olefins, with the methyl groups being located at any position along the alpha olefin molecules linear backbone

optionally, separating a particular olefinic component containing linear olefins and monomethyl alpha olefins, with the methyl groups being located at any position along the alpha olefin molecules linear backbone therefrom; and

feeding the olefinic product or the olefinic component containing linear olefins and mono-methyl alpha olefins, with the methyl groups being located at any position along the alpha olefin molecules linear backbone as a feedstock to a hydroformylation stage in which the feedstock is reacted with carbon monoxide and hydrogen in the presence of a catalytically effective quantity of a homogeneous phosphine and/or phosphite ligand modified rhodium cobalt or ruthenium hydroformylation catalyst and under hydroformylation reaction conditions, to produce biodegradable oxygenated products comprising aldehydes and/or primary alcohols
wherein the Fischer-Tropsch reaction stage olefinic product or olefinic component is used directly in the hydroformylation stage without any substantial purification or further processing thereof to remove unwanted components."

Claim 1 of auxiliary request 1B differed from claim 1 of auxiliary request 1A only in that the term "aldehydes" was amended into "primary aldehydes".

Claim 1 of auxiliary requests 1D and 1E differed from claim 1 of auxiliary requests 1A and 1B respectively only in that the catalyst was restricted to "a homogeneous phosphine ligand modified rhodium cobalt or ruthenium hydroformylation catalyst".

Claim 1 of auxiliary requests 2A, 2B, 2D and 2E was identical to claim 1 of auxiliary requests 3A, 3B, 3D and 3E respectively and differed only from claim 1 of auxiliary requests 1A, 1B, 1D and 1E, respectively, in that the feature "with any non-olefinic components in single or multiple carbon number fractions of the Fischer-Tropsch stage product then acting as a reaction medium and/or solvent medium in the hydroformylation stage" was added at the end of the claim.

Independent claim 1 of auxiliary request 4A read as follows:

"1. A process for producing oxygenated products, which process comprises

subjecting, in a Fischer-Tropsch reaction stage, a synthesis gas comprising carbon monoxide (CO) and hydrogen (H_2) to Fischer-Tropsch reaction conditions in the presence of an iron based, a cobalt based or an iron/cobalt based Fischer-Tropsch catalyst, to obtain an olefinic product containing linear olefins and mono-methyl-alpha olefins, with the methyl groups being located at any position along the alpha olefin molecules linear backbone and

feeding the olefinic product containing the linear and mono-methyl alpha olefins, with the methyl groups being

located at any position along the alpha olefin molecules linear backbone as a feedstock to a hydroformylation stage

wherein the Fischer-Tropsch reaction stage olefinic product is used directly without any substantial purification or further processing thereof to remove unwanted components, with any non-olefinic components in single or multiple carbon number fractions of the Fischer Tropsch stage product then acting as a reaction medium and/or solvent medium in the hydroformylation stage wherein the feedstock is reacted with carbon monoxide and hydrogen in the presence of a catalytically effective quantity of a homogeneous phosphine and/or phosphite ligand modified rhodium cobalt or ruthenium hydroformylation catalyst and under hydroformylation reaction conditions, to produce biodegradable oxygenated products comprising aldehydes and/or primary alcohols."

Claim 1 of auxiliary request 4B differed from claim 1 of auxiliary request 4A only in that the term "aldehydes" was amended into "primary aldehydes".

Claim 1 of auxiliary requests 4D and 4E differed from claim 1 of auxiliary requests 4A and 4B respectively only in that the catalyst was restricted to "a homogeneous phosphine ligand modified rhodium cobalt or ruthenium hydroformylation catalyst".

Independent claim 1 of auxiliary request 5A read as follows:

"1. A process for producing oxygenated products, which process comprises

subjecting, in a Fischer-Tropsch reaction stage, a synthesis gas comprising carbon monoxide (CO) and hydrogen (H_2) to such Fischer-Tropsch reaction conditions in the presence of an iron based, a cobalt based or an iron/cobalt based Fischer-Tropsch catalyst, to obtain an olefinic product;
without working up the olefinic product to remove unwanted components therefrom, feeding the olefinic product as a feedstock to a hydroformylation stage in which the feedstock is reacted with carbon monoxide and hydrogen in the presence of a catalytically effective quantity of a homogeneous phosphine and/or phosphite ligand modified rhodium, cobalt or ruthenium hydroformylation catalyst and under reaction conditions, to produce biodegradable oxygenated products comprising aldehydes and/or alcohols, with any non-olefinic components present in single or multiple carbon number fractions in the Fischer-Tropsch reaction stage product, then acting as a reaction medium and/or a solvent medium in the hydroformylation stage."

Claim 1 of auxiliary request 5B differed from claim 1 of auxiliary request 5A only in that the catalyst was restricted to "a homogeneous phosphine ligand modified rhodium cobalt or ruthenium hydroformylation catalyst".

VI. As regards the requirement of Article 123(2) EPC with respect to the specification of the hydroformylation catalyst to be a homogeneous phosphine ligand modified rhodium, cobalt or ruthenium catalyst in the absence of the phrase "when predominantly linear oxygenated

hydroformylation products are required", the Appellant submitted that this amendment was based on claim 20 as filed and on the passage of page 9, lines 13 to 21 of the original application.

Although original claim 20 disclosed those homogeneous catalysts when predominantly linear oxygenated hydroformylation products are required, the production of those products was merely a wish or a motivation for the skilled person and thus had no limiting effect on the claim.

The Appellant furthermore argued that the use of the catalyst would inevitably lead to the predominantly linear oxygenated product thereby rendering this expression redundant.

VII. The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request A or B filed during the oral proceedings or, subsidiarily on the basis of one of the auxiliary requests 1A, 1B, 1D, 1E, 2A, 2B, 2D, 2E, 3A, 3B, 3D, 3E, 4A, 4B, 4D, 4E all requests filed by *facsimile* on 22 July 2008 or further subsidiarily on the basis of auxiliary request 5A or 5B filed on 24 April 2008.

VIII. The Respondent (Opponent (1)) neither filed any submission in appeal proceedings nor made any request.

IX. At the end of the oral proceedings the decision of the Board was announced.

Reasons for the Decision

1. The appeal is admissible

2. The Respondents' 2 and 3 declarations to withdraw their opposition are to be understood as withdrawal from the appeal proceedings. Thus, they cease to be parties to appeal proceedings as far as the substantive issues are concerned (see decision T 789/89, OJ EPO 1994, 482, points 2.3 and 2.6 of the reasons).

Amendments

3. An amendment in process claim 1 of all requests relates to the definition of the hydroformylation catalyst to be specifically a homogeneous phosphine ligand modified rhodium cobalt or ruthenium hydroformylation catalyst as such, in the absence of any structural specification of the product prepared.

3.1 In order to determine whether or not an amendment offends against Article 123(2) EPC it has to be examined whether technical information has been introduced which a skilled person would not have objectively and unambiguously derived from the application as filed.

3.2 According to the Appellant this amendment is based on claim 20 as filed and on the passage on page 9, lines 13 to 21 of the original application.

3.3 Claim 20 of the application as filed discloses the use of a homogeneous phosphine ligand modified rhodium cobalt or ruthenium hydroformylation catalyst which is

causally linked to the structural definition of the products prepared, i.e. to predominantly linear oxygenated hydroformylation products.

A generalisation of this originally disclosed embodiment has thus been made since now claim 1 of all requests covers the use of these specific catalysts for the production of oxygenated products not being predominantly linear, while a process comprising those homogeneous catalysts is disclosed in the application as filed only in combination with that particular structural characteristic, which is no longer required in present claim 1.

3.3.1 Such an amendment resulting in isolating a specific feature from a particular embodiment and generalising it in a claim would only be allowable, provided the skilled man would have readily recognised this feature as not so closely associated with the other features of this embodiment as to determine the effect of that feature of the invention as a whole in a unique manner and to a significant degree.

3.3.2 In the present case, however, the use of those specific homogeneous catalysts in the claimed process is disclosed to be linked to the structural definition of the products prepared, i.e. the production of predominantly linear oxygenated hydroformylation products. Hence, those homogeneous catalysts are originally disclosed only in this particular context with the consequence that the skilled person derives from the embodiment disclosed in original claim 20 nothing more than the bare disclosure of all their

technical characteristics in their particular combination.

To dismantle this feature from the structural requirement originally disclosed only in combination and to generalize that feature over the whole scope of claim 1 covering the production of oxygenated products being not predominantly linear thus provides the skilled person with technical information which is not directly and unambiguously derivable from the application as filed.

As a consequence the amendment in claim 1 defining the use in the process of those specific homogeneous catalysts in the absence of any structural specification of the product cannot be based on the disclosure of claim 20 of the original application, but is an undue generalisation thereof which extends beyond the content thereof.

3.4 The passage of page 9, lines 13 to 21 of the application as filed discloses subject-matter corresponding to that of original claim 20.

At lines 19 to 21, a homogeneous phosphine ligand modified rhodium cobalt or ruthenium hydroformylation catalyst is disclosed, however, only in combination with the structural specification of the oxygenated products prepared, i.e. being predominantly linear. This finding is due to the fact that the sentence disclosing the catalyst reads "**Thus**, the hydroformylation catalyst may **then** be a …" (emphasis added by the Board) thereby indicating a mandatory link

referring back to what precedes, i.e. the production of predominantly linear oxygenated products.

Hence, this passage of page 9, lines 13 to 21 of the application as filed cannot form an adequate basis for the amendment of claim 1.

3.5 For the reasons below the Board cannot accept the Appellant's arguments that the characterisation of the oxygenated hydroformylation products being predominantly linear could be omitted without infringing Article 123(2) EPC.

3.5.1 The Appellant argued that the production of predominantly linear oxygenated hydroformylation products was merely a wish and a motivation for the skilled man.

However, the expression "predominantly linear" present in claim 20 as filed is a technical feature since it characterises the chemical structure of the oxygenated hydroformylation products being prepared. This feature is disclosed in combination with the use of particular homogeneous catalysts in the hydroformylation stage. Hence, the structural characterisation of the oxygenated products being prepared, i.e. predominantly linear, necessarily provides a technical contribution to the subject-matter claimed.

3.5.2 The Appellant furthermore argued that the use of the homogeneous catalysts recited in the claimed process would inevitably lead to the predominantly linear oxygenated product thereby rendering this feature redundant.

However, as conceded by the Appellant, the nature of products prepared by the claimed process depends *inter alia* on the way of operating the hydroformylation stage. The structural characteristics of the products being prepared, thus, may vary according to the operation of the hydroformylation stage. The use of catalysts as specified in claim 1 on its own therefore does not, in any circumstances, lead inevitably and unavoidably to oxygenated products being predominantly linear.

For this reason, the structural characterisation of the product obtained by the process is not a redundant feature, but provides essential technical information supplementing the simple choice of the catalyst.

4. Since the process of claim 1 according to each request has been amended by specifying the hydroformylation catalyst to be a homogeneous phosphine ligand modified rhodium cobalt or ruthenium hydroformylation catalyst in the absence of the technical feature which is inseparably associated therewith in the application as filed, namely of preparing predominantly linear oxygenated products, the subject-matter of claim 1 of each request extends beyond the content of the application as filed.

Hence, all requests must be rejected pursuant Article 123(2) EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar | The Chairman

C. Rodrígez | R. Freimuth