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**Datasheet for the decision
of 21 March 2018**

Case Number: T 0355/15 - 3.3.06

Application Number: 02736648.3

Publication Number: 1392432

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B01J23/26, B01J23/28, B01J23/30

Language of the proceedings: EN

Title of invention:

Method for making a high surface area, small crystallite size catalyst for Fischer-Tropsch synthesis

Patent Proprietor:

Clariant Corporation

Opponent:

JOHNSON MATTHEY PUBLIC LIMITED COMPANY

Headword:

Fischer-Tropsch catalyst / CLARIANT

Relevant legal provisions:

EPC Art. 83, 84, 111(1), 123(2)

EPC R. 99(1)(c), 99(2)

RPBA Art. 13(3)

Keyword:

Admissibility of appeal - (yes)

Admittance of new main request (amended claims and description) filed at the oral proceedings (yes)

Post-grant modifications of claims and description - not objectionable

Sufficiency of disclosure - (yes)

Remittal to the department of first instance - (yes)

Decisions cited:

Catchword:



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Case Number: T 0355/15 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 21 March 2018

Appellant: Clariant Corporation
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 18 December
2014 revoking European patent No. 1392432
pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman B. Czech
Members: G. Santavicca
J. Hoppe

Summary of Facts and Submissions

- I. The appeal lies from the decision of the Opposition Division revoking European patent No. 1 392 432.
- II. The patent in suit concerns "*a method for making a catalyst for use in the Fischer-Tropsch process...*". Herein below, the acronym **FT** is used instead of the expression "Fischer-Tropsch".

The patent in suit had been opposed on the grounds of lack of an inventive step (Article 100(a) EPC), insufficiency of the disclosure (Article 100(b) EPC) and added matter (Article 100(c) EPC).

The evidence relied upon includes document

D4: E. Iglesia, "*Design, synthesis, and use of cobalt-based Fischer-Tropsch synthesis catalysts*", Applied Catalysis, A: General, no. 161, 1997, pages 59-78, XP002360862.

- III. In the decision under appeal, the Opposition Division came *inter alia* to the following conclusions:
- The modified version of the patent in suit according to the Main Request filed with letter dated 7 November 2014 was not objectionable on formal grounds.
 - However, the patent in suit did not sufficiently disclose how the "*reducing*" step g) of Claim 1 was to be carried out in order to achieve the "claimed improvement".
- Thus, the person skilled in the art seeking to carry out the claimed reduction step "would indeed need to embark on a research program, in particular in as far

as reductant, further components and operating conditions are concerned".

- IV. With its statement setting out the grounds of appeal the Appellant (Patent Proprietor) submitted four sets of amended claims as Auxiliary Requests 1 to 4. It rebutted the reasoning given by the Opposition Division as regards the finding of insufficiency of the disclosure, referring also to newly filed documents supposed to illustrate common general knowledge regarding the FT process.
- V. In its reply, the Respondent *inter alia* called into question the admissibility of the appeal. It also maintained that the claimed invention was insufficiently disclosed, referring to further documents regarding the relevant common general knowledge.
- VI. With a further letter, dated 21 February 2018, the Appellant filed a new set of amended claims as new Auxiliary Request 3, replacing the previously pending Auxiliary Request 3. It also indicated why it considered the appeal to be admissible and took position once more as regards the sufficiency of the disclosure.
- VII. In a communication in preparation for oral proceedings (dated 7 March 2018), the Board expressed its provisional opinion, indicating *inter alia* why it considered
- the appeal to be admissible, and
 - the disclosure of the invention in the patent in suit to be sufficient.

It also called into question the formal allowability of

modifications made to the claims and the description according to the Main Request that had been considered by the Opposition Division.

- VIII. With a further letter of 9 March 2018, the Appellant submitted six sets of claims as Main Request (supposed to be identical to the Main Request that had been pending before the Opposition Division) and Auxiliary Requests 1 to 5, respectively. It considered that all of its claim requests were to be admitted and responded to the Board's comments on the modifications made to the patent as granted.
- IX. In a further letter, the Respondent *inter alia* reiterated why it considered that the invention was insufficiently disclosed in the patent and that the modifications made to the patent as granted were not admissible and/or not allowable.
- X. Oral proceedings took place on 21 March 2018.

Following the debate and the deliberation, the Board indicated that it considered

- that the appeal was admissible,
- that the objection under Article 123(2) EPC against Claim 1 of the pending Main Request was not convincing, and
- that the objection regarding sufficiency of the disclosure was not convincing either.

In the course of the oral proceedings the Respondent raised a new objection under Article 84 EPC (clarity) against Claim 9 (incompatibility of "*rhenium (VII) oxide*" with "*promoter salt*").

Made aware of the Board's position regarding the non-

allowability of the pending Main Request, the Appellant expressly declared that its pending Auxiliary Request 1, comprising (again) Claim 2 as granted, filed with letter dated 9 March 2018 became its new Main Request, and that the pending Main Request and Auxiliary Request 2 filed with letter dated 9 March 2018, were withdrawn.

It also submitted an amended page 5 of the patent specification as integral part of its new Main Request.

XI. The new Main Request filed at the oral proceedings comprises twelve claims. Only claims 3, 5, 10 are amended as compared to the corresponding claims as granted. Claim 1 reads as follows:

"1. A method for making a catalyst for use in the Fischer- Tropsch process, said catalyst comprising cobalt dispersed on a support to form a catalyst particle, wherein said support is selected from the group consisting of aluminum oxide, γ -alumina, alumina monohydrate, alumina trihydrate, alumina- silica, magnesium silicate, silica, silicate, titania, zirconia, niobia, hydrotalcite, kieselguhr, attapulgite clay, zinc oxide, other clays and combinations thereof, said catalyst particle being formed by the steps of:

- a) adding said support to water, with agitation, to form a slurry and maintaining a slurry temperature at from 35°C to 210°C;*
- b) adding an aqueous cobalt salt solution having a pH value greater than the point of zero charge of said support to said slurry with agitation and while maintaining said slurry temperature at from 65°C to 120°C, said cobalt salt solution comprising water and a cobalt(II) complex having coordination sphere ligands selected from the group consisting of water, chloride*

ion, ammonia, pyridine, triphenylphosphine, 1, 2-diaminoethane, diethylenetriamine, triethylenetetraamine, acetate, oxalate, 2,4-pentanedione, ethylenedinitrilo tetraacetic acid, and combinations thereof;

c) agitating said slurry and maintaining said slurry temperature at from 65°C to 120°C until said cobalt salt is essentially completely reacted with said support;

d) separating said slurry into a solid portion and a liquor portion;

e) washing said solid portion with water;

f) drying and calcining said solid portion at from 90°C to 375°C to form catalyst particles; and

g) reducing said catalyst particles by heating said particles from ambient temperature to from 300°C to 500°C at a rate of from 0.1°C/min to 10°C/min over a period of from 5 hours to 40 hours."

Amended claims 3, 5 and 10 read as follows (amendments to the claims as granted by **insertion** or ~~deletion~~ of terms made apparent by the Board):

"3. The method of claim 1 or 2 wherein said cobalt (II) complex has coordination sphere ligands selected from the group consisting of water molecules, ammonia, pyridine, ~~diaminoethane~~, diethylenetriamine, triethylenetetraamine, and a combination thereof."

"6. The ~~catalyst~~ **method** of claims 1 to 5 wherein said solid portion is dried at from 120 °C to 260°C in step f)."

"10. The method of claim 9 wherein said promoter is a metal **salt** selected from the group consisting of rhenium (VII) oxide, ruthenium nitrosyl nitrate,

platinum chloride, platinum. ammine nitrate, platinum ammine chloride, and combinations thereof."

The new Main Request also comprises the amended page 5 of the B1-specification (*infra*).

XII. Final Requests

The Appellant (Patent Proprietor) requested that the decision be set aside and that the case be remitted to the Opposition Division for further prosecution on the basis of the claims 1 to 12 and amended page 5 according to the Main Request filed during the oral proceedings, or, if that was not possible, on the basis of the claims according to one of Auxiliary Requests 3 to 5 filed with letter dated 9 March 2018.

The Respondent (Opponent) requested that the appeal be dismissed.

XIII. The arguments of the Appellant (Patent Proprietor) of relevance for the present decision can be summarised as follows:

Admissibility of the appeal

The decision under appeal was based on the Main Request that had ultimately been pending before the Opposition Division, the claims of which were limited over the claims as granted.

The request ("that the decision of the Opposition Division be withdrawn and the subject European patent be maintained") in the notice of appeal had the effect of "defining the subject-matter of the appeal" pursuant to Rule 99(1) (c) EPC.

In its statement setting out the grounds of appeal, a

Main Request and Auxiliary Request 1 to 4 were formulated, which defined the extent to which the decision was to be amended. It was clear from said statement that upon remittal the further prosecution should be based on the Main Request that had also been pending before the Opposition Division. Thus, the appeal was admissible.

Admittance of the new Main Request

The new Main Request was filed at the oral proceedings in reaction to objections raised by the Board. This request was thus to be admitted despite its late filing.

New Main Request - post-grant modifications

Claim 1 as granted was based on *inter alia* Claim 11 as originally filed. The amendments in Claims 3, 6 and 10 were occasioned by objections raised by the Opponent under Article 100(c) EPC, thus complied with Rule 80 EPC.

The alleged lack of clarity in Claim 10 (rhenium(VII) oxide not being a salt) was not convincing, as this oxide would be used in solution, where it would be transformed into a salt.

The use of aluminum oxide as support material being a preferred embodiment, the amendment in paragraph [0015] of the description was allowable.

Sufficiency of the disclosure

There was no insufficiency of the disclosure. More particularly, the Opposition Division had not defined

the person skilled in the art and insufficiently considered common general knowledge concerning the FT process synthesis and catalysts therefor. The person skilled in the art was a graduated chemist/chemical engineer familiar with the relevant common general knowledge as illustrated by the documents submitted as evidence therefor and relied upon.

Taking also into account the information provided in paragraphs [0030] and [0031] of the patent in suit, and considering that the patent in suit did not require any special conditions to be applied when reducing the catalyst particles, the person skilled in the art would understand the term "*reducing*" in step g) of Claim 1 at issue to refer to reducing conditions which were usual in the preparation of catalysts for FT reactions. These included the use of known reducing agents, such as hydrogen (also mentioned in D4), or synthesis gas. The disclosure in the patent in suit enabled the person skilled in the art taking into account common general knowledge to carry out the method of Claim 1. The invention was thus sufficiently disclosed.

The gist of the invention was the way in which the cobalt salt was applied (steps a) to c) of Claim 1) onto the support, leading to small crystallites and catalyst particles having a smoother surface, compared to the known impregnation methods.

XIV. The counter-arguments of the Respondent (Opponent) of relevance for the present decision can be summarised as follows:

Inadmissibility of the appeal

The notice of appeal was deficient, because it did not include any statement as to the extent to which the

contested decision was to be set aside, and because it did not clearly indicate the subject-matter of the Main Request pursued in appeal (patent as granted or as amended and dealt with in the decision under appeal?). Further the Appellant had neither submitted a Main Request with its the statement of grounds of appeal nor indicated which set of claims was the basis for the appeal. Thus, the appeal should be rejected as inadmissible.

New Main Request - Post-grant modifications

Claim 1 was objectionable under Article 123(2) EPC in so far as the characteristics of the catalysts particles from paragraph [0025] were not incorporated into Claim 1 together with the list of support materials.

The amendments in Claims 3, 6 and 10 were not occasioned by a ground of opposition, thus did not comply with Rule 80 EPC.

The modification in the text of the patent (then submitted as page 9, line 9, of the original application) should not be accepted, since Rule 139 EPC was not applicable, and the amendment made was thus objectionable under Article 123(2), (3) EPC.

Insufficiency of the disclosure

The patent in suit did not directly and unambiguously disclose how reduction step g) of Claim 1 at issue was to be performed. Paragraphs [0030] to [0031] contained no information as regards the reducing conditions and the nature of the reducing agent to be used in "step g" of the process in order to obtain the improved

crystallites and surfaces invoked by the Appellant. The examples of the patent in suit did not even mention that a reduction step had been carried out. D4, referred to in the patent in suit, disclosed certain catalyst precursor-support pairs and their reduction. However, D4 did not unambiguously disclose that such treatment would be applicable to all catalysts, let alone that any known reductant was suitable under the conditions indicated in Claim 1. The latter did not specify what degree of reduction was necessary for achieving the desired small crystallites. Accordingly, many experiments needed to be carried out by the person skilled in the art seeking to make such catalysts according to the invention, i.e. in order to find out how the step of "*reducing the catalyst particles*" (Claim 1, step g) had to be performed to achieve this. In particular, the heating rate and duration ranges defined in Claim 1 were so broad that the skilled person had to work out for himself which specific heating rate falling under Claim 1 actually satisfied the conditions of "*slowly heating*" expressed in paragraph [0030] of the patent in suit. Having to identify which particular set of conditions, e.g. which heating rate, temperature profile, nature of reducing gas (hydrogen and/or carbon monoxide, pure gas or mixture) etc. was to be applied in a particular case in order to ensure that the crystallite size remains small and the BET surface area large amounted to an undue experimental burden. In fact, identifying these process conditions also involved SEM, BET and XRD measurements, necessary for determining the achievement of the sought-for parameters.

Thus, the claimed process was insufficiently disclosed.

Reasons for the Decision

1. Admissibility of the appeal

1.1 In the decision under appeal, the Opposition Division concluded that the patent had to be revoked since it was objectionable under Article 100(b)/83 EPC, both in the amended version according to the then pending Main Request, and in the amended version according to the then pending Auxiliary Request 1.

1.2 In its notice of appeal dated 13 February 2015, the Appellant requested "that the decision of the Opposition Division be withdrawn and the subject European patent be maintained".

For the Board, this is an at least implicit request to set aside the decision under appeal, which "defin[es] the subject of the appeal" pursuant to Article 108, Rule 99(1)(c) EPC.

1.3 As pointed out by the Respondent, neither of notice of appeal and statement of grounds of appeal contains an express request for the maintenance of the patent in a particular version (claims, description pages and figures).

1.3.1 In the present case this does not, for the Board, mean that the requirement stipulated in Rule 99(2) EPC is not met, according to which "the extent to which [the decision] is to be amended" must be indicated in the statement setting out the grounds of appeal.

1.3.2 In particular, the Appellant's statement setting out the grounds of appeal (point 2.1) contains *inter alia* the following requests:

"Main request

It is requested to set aside the decision of the opposition division to revoke the patent and to remit the case back to the opposition division for further examination."

Should the appeal board not allow our main request already based on our written submission, oral proceedings (Art.116 EPC) are requested".

1.4 Considering also

- that no new set of claims labeled Main Request was filed together with the statement of grounds,
- that the claims of the patent as granted are not mentioned, let alone considered further in the statement,
- that the statement contains no further indications as regards the version (claims, description pages, figures) of the patent to be considered in the first place,

the Board concludes that the Appellant implicitly requested, both in its notice of appeal and in its statement of grounds, that the revocation decision be set aside and the proceedings be continued on the basis of the highest-ranking request that had ultimately been pending before the Opposition Division, i.e. on the basis of the amended version according to the then pending Main Request (comprising Claim 1 as granted and amended dependent claims 2 to 11).

1.5 In the board's judgement, the appeal is, therefore, admissible (Article 108, Rules 99(1)c) and 99(2) EPC)

New Main Request filed at the oral proceedings - Admittance

2. This request at issue was only submitted at the oral proceedings before the Board, but in response to and in order to overcome reservations expressed by the Board in its communication and/or at the oral proceedings that concerned the formal admissibility and/or allowability of some post-grant modifications.
 - 2.1 The Appellant did not object to the filing of this claim request.
 - 2.2 The claim request did not give rise to some further complex issues and thus did not raise issues which needed an adjournment (Article 13(3) RPBA).
 - 2.3 Hence, in the exercise of its discretion pursuant to Article 13(1) RPBA, the Board decided to admit this claim request into the proceedings despite its late filing.

Main Request - Post-grant modifications of the patent

3. The Respondent objected that the amendments made to the patent as granted were formally objectionable on the following grounds:

Claim 1:
objectionable under Article 100(c) EPC;

Claim 3:
objectionable under Rule 80 EPC;

Claim 6:
objectionable under Rule 80 EPC;

Claim 10:

objectionable under Rule 80 EPC and Article 84 EPC;

Page 5:

Rule 139 EPC not applicable, amendment thus objectionable under Articles 123(2) and (3) EPC.

4. The Board disagrees for the following reasons:

4.1 Claim 1

4.1.1 The Respondent (letter of 26 August 2015, Point 5.1) maintained that the inclusion of the list of the possible support materials without the inclusion of the characteristics of the catalyst particles thereof (particle size, surface area, pore volume and average pore diameter) amounts to an impermissible generalisation.

4.1.2 For the Board, this objection is not convincing. Claim 1 as granted is fairly based on (product-by-process) Claims 11, 12 and 15 as originally filed, whereby original Claim 12 as filed merely lists the possible supports, without requiring them to have particular physical characteristics. Also, the mere suppression of some of the originally listed supports (silicalite, γ -zeolite, mordenite, thoria, other zeolites) from the (single) list of supports merely restricts the range of the supported catalysts to be produced. This does not amount to undisclosed intermediate generalisations or impermissible selections.

4.1.3 Hence, on the Board's judgement, Claim 1 is not objectionable under Article 123(2) EPC.

4.2 Claim 3

4.2.1 This claim is identical to Claim 3 as granted except for the deletion of the alternative ligand "*diaminoethane*".

4.2.2 The deletion of the "*diaminoethane*" aims to overcome an objection raised against claim 3 in the notice of opposition (Point 2) under Article 100(c) EPC, thus this amendment complies with Rule 80 EPC. The deletion of this ligand from the list of alternative ligands in Claim 3 is not objectionable as such under Article 123(2) EPC.

4.2.3 The back-reference to Claim 2 as granted finds basis in Claim 16 of the application as filed, which refers back to Claim 11 of the application as filed, relating to catalysts with any type of support, thus also to alumina oxide supports (referred to in Claim 2 as granted), the preferred support according to the application filed (see claim 12 and page 9, line 10, page 16, line 8). In other words, Claim 3 is not directed to a combination of features not disclosed in the application as filed

4.2.4 In the Board's judgement, the Claim 3 at issue also complies with the requirements of Article 123(2) EPC.

4.3 Claim 6

4.3.1 Claim 6 at issue differs from claim 6 as granted that the term "*catalyst*" was replaced by the term "*method*", i.e. the category of the claim is changed.

4.3.2 At the oral proceedings before the Board, the Appellant convincingly argued that this amendment was occasioned

by a ground of opposition under Article 100(a) EPC (objection of lack of novelty of the claimed catalyst over the disclosure of D1) invoked by the Opponent (but not dealt with in the decision under appeal).

Hence, also this amendment complies with Rule 80 EPC.

4.3.3 The Board holds that the multidependency on preceding claims is not objectionable under Article 123(2)/100(c) EPC, as the drying temperatures defined in this claim are disclosed in the application as filed on page 16, line 6, and in Claim 19 referring back to the broadest product-by-process claim 11, applicable to all the embodiments.

4.4 Claim 10

4.4.1 Claim 10 at issue differs from Claim 10 as granted in that the term "*metal*" was changed to "*metal salt*".

4.4.2 This amendment was made in order to overcome an objection under Article 100(c) EPC raised in the notice of opposition.

This amendment thus complies with Rule 80 EPC.

4.4.3 The so-amended claim finds literal basis in Claim 24 of the application as filed.

Its compliance with Article 123(2) EPC was thus not disputed.

4.4.4 Of course "*rhenium (VII) oxide*" is not, strictly speaking, a metal **salt**. The Board, however, takes into account that Claim 10 depends on Claim 9, reading "*9. The method of any of claims 1 to 8 wherein the*

catalyst further includes at least one promoter..." and requiring that the "... at least one promoter ... being added with said cobalt solution".

Hence, the promoter is provided as component of the aqueous cobalt salt solution mentioned in step b) of Claim 1.

The Board accepts that the inclusion of rhenium(VII) oxide in the aqueous cobalt aqueous leads to the formation of a corresponding salt, as stated by the Appellant. This was not disputed by the Respondent.

For the Board, this implies that in the case of the promoter "*rhenium (VII) oxide*" is *de facto* incorporated into a catalyst precursor form as a salt.

The use of the terms "*rhenium (VII) oxide*" and "*salt*" only appears to be contradictory at first glance. Therefore, the objection raised under Article 84 (clarity) against Claim 10 is not convincing.

4.5 Amended description

- 4.5.1 Page 5 of the patent specification according to the new Main Request comprises the following modification in the text of paragraph [0015], fourth sentence (inserted text made apparent by the Board):

*"The catalyst of the present invention is **in a preferred embodiment** prepared with high purity aluminum oxide support ...".*

- 4.5.2 The Board considers this modification as an amendment pursuant to Article 123(1) EPC, which is admissible pursuant to Rule 80 EPC because it is occasioned by the

ground of opposition under Article 100(c) EPC, see the objection raised and substantiated in the notice of opposition (page 1, last paragraph, thereof) and maintained in the letter of 26 August 2015 (Point 5) of the Respondent.

- 4.5.3 The amendment finds basis in the application as filed, e.g. on page 16, lines 8 to 11, and in Claim 13 of the application as filed. It is clear from said passages that the features referred to in paragraph [0015] of the patent (defining ranges for the particle size, the surface area and the pore diameter of the support) are not presented as mandatory features of the invention (where these ranges are features according to dependent Claim 14).

Thus, the amendment complies with Article 123(2) EPC.

- 4.5.4 Claims 2 as granted is expressly directed to a method wherein "*aluminium oxide*" is used as the support, without requiring more specific features, let alone physical characteristics thereof.

Since the amended paragraph [0015] merely expresses that such further features/physical characteristics of the aluminium oxide support mentioned there concern a preferred embodiment thereof, the amendment made does not extend the protection conferred, thus also complies with Article 123(3) EPC.

- 4.6 In the Bord's judgement all post-grant modifications made, according to the new Main Request at issue, to the claims and description of the patent as granted are amendments which are both admissible and allowable.

Main Request - Sufficiency of the disclosure

5. The question to be decided is whether the patent discloses the claimed invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art without undue burden across the whole breadth as claimed.
6. As regards the claimed invention, the Board notes the following:
 - 6.1 Claim 1 is directed to a *"method for making a catalyst for use in the Fischer-Tropsch process, said catalyst comprising cobalt dispersed on a support to form a catalyst particle"*, the method making use of specific raw materials, i.e. as support and cobalt catalyst precursor materials, and involving preparation steps a) to g) carried out under defined operating conditions.
 - 6.2 Although the catalyst so-prepared must of course display at least some activity in catalysing FT syntheses, Claim 1 does **not** require the achievement of a particular technical effect (or improvement) going beyond that, let alone some quantified chemical or physical property/effect (e.g. crystallite size, surface area or surface smoothness) of the catalyst particles obtained by the claimed process.
 - 6.3 Hence, the Board holds that, in line with e.g. G 1/03 (OJ 2004, 413, reasons 2.5.2, seventh and eighth sentences), since no effect is expressed in claim 1, there is no insufficiency of the disclosure in this respect. The finding of the Opposition Division (contested decision, Reasons 3.2.4, last paragraph) referring to a **"claimed improvement"** (emphasis added by the Board)), and the possibility (invoked by the

Respondent) that small crystallites and a large surface area may **not** be achieved when carrying out the method according to Claim 1, can thus not, as such, justify the conclusion that the patent is insufficient, provided that the person skilled in the art seeking to carry out the claimed method need not become inventive in choosing the materials to be used and in implementing the method steps under appropriate operating conditions. It emanates from the following considerations that this is not the case.

6.4 As regards the requirement for a disclosure that is "*sufficiently clear and complete*", the Board observes the following:

6.4.1 In assessing whether this requirement is met, the entire explicit disclosure of the patent in suit (not only Claim 1) is to be considered. Moreover, this disclosure may be complemented by relevant common general knowledge.

This means that not all the implicit features of the claimed subject-matter need be "directly and unambiguously disclosed" in the patent in suit itself, in order for the patent to meet the sufficiency requirement (as put forward by the Respondent).

6.4.2 In the present case, the notional person skilled in the art is familiar with usual techniques for the preparation of catalysts for FT syntheses, also referred to in paragraph [0004] and [0011]. Moreover, in paragraph [0011] reference is expressly made to document D4. This review-type document illustrates (see title and section 3 thereof) common general knowledge regarding the preparation of supported cobalt catalysts for FT syntheses.

- 6.5 Alleged lack of technical guidance in the patent
 - 6.5.1 At the oral proceedings before the Board, it was common ground that mere heating cannot result in the reduction of the cobalt catalyst precursor resulting from process steps a) to f) to an active cobalt (metallic) catalyst.
- 6.6 The only insufficiency objection actually substantiated with regard to some express features of Claim 1 concerns the allegedly insufficient disclosure of how reduction step (g) (full wording under Point XI, *supra*) is to be carried out. More specifically, the Respondent essentially emphasised that no reducing agent at all was mentioned in the patent in suit and that the temperature, heating rate and duration ranges indicated were extremely broad. The person skilled in the art would thus have to embark on a research program in order to find appropriate operating conditions under which reduction step g) could successfully be carried out.
- 6.7 This argumentation fails to convince the Board for the following reasons.
 - 6.7.1 As illustrated for instance by document D4 (see in particular Point 3. Synthesis of supported cobalt catalysts, on page 64, e.g. Table 2, and right column, lines 10 to 13), a document expressly referred to in the patent in suit in connection with the claimed reduction step (paragraph [0021]), it was common general knowledge to use hydrogen gas as the reducing agent in the preparation of supported cobalt catalysts for FT syntheses under a temperature regime comparable

to the one according to the patent in suit.

6.7.2 It was not in dispute that the use of other gaseous reducing agents was also known in the field of FT catalyst preparation, the objection raised being rather that the person skilled in the art would have to embark on a research program in order to identify, for a given reductant, suitable operating conditions.

6.7.3 Paragraphs [0021] and [0030] of the patent in suit deal with the criticality of the reduction conditions (temperature profile, level of reduction temperature, duration) to be applied, and the bearing they have on the properties (crystallite size and surface area) of the catalyst obtained. In both paragraphs, guidance is given regarding more preferred temperature regimes.

In paragraph [0030] of the patent in suit the following, more concrete operating conditions for the reduction are indicated: "*The reduction starts at ambient temperature and slowly raises the temperature at about 1°C/min to about 350°C and then maintains the temperature at about 350°C for from about 12 hours to about 16 hours*".

6.7.4 The Respondent did not further substantiate its insufficiency objection by verifiable facts, e.g. in the form of appropriate experimental evidence.

Hence the Board sees no reason for a reversal of the burden of proof, and has no reason to believe that the person skilled in the art would not be able to identify, based on the indications given in the patent in suit, i.e. without undue burden, various appropriate reduction conditions (reducing gases, support materials, temperature regimes).

6.8 Hence, in the Board's judgement, the patent in the amended version according to the Main Request at issue is not objectionable under Article 83 EPC.

Remittal

7. The ground for opposition according to Article 100(a) EPC that had been raised by the Opponent is not dealt with in the decision under appeal. The Board thus finds it appropriate to remit the case to the Opposition Division for further prosecution, in particular for consideration of the remaining objections to patentability, in accordance with the Appellant's request to this end.

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The case is remitted to the Opposition Division for further prosecution on the basis of the claims 1 - 12 and amended description page 5 according to the new main Request filed during the oral proceedings.

The Registrar:

The Chairman:



D. Magliano

B. Czech

Decision electronically authenticated