PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/EP2018/070315	26.07.2018	07.08.2017

International Patent Classification (IPC) or both national classification and IPC
INV. C12P5/02

Applicant
TOTAL RAFFINAGE CHIMIE

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:	Date of completion of this opinion	Authorized Officer
European Patent Office Gitschiner Str. 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax: +49 30 25901 - 840	see form PCT/ISA/210	Korsner, Sven-Erik Telephone No. +49 30 25901-0

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/EP2018/070315

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:

   a. ☐ forming part of the international application as filed:

      ☐ in the form of an Annex C/ST.25 text file.

      ☐ on paper or in the form of an image file.

   b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.

   c. ☐ furnished subsequent to the international filing date for the purposes of international search only:

      ☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).

      ☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-18
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-18
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-18
	No:	Claims	

2. Citations and explanations

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rules 43*bis*.1 and 70.10)

and / or

2. Non-written disclosures (Rules 43*bis*.1 and 70.9)

see form 210

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re item V:

Reasoned statements with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statements

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Initial remarks:

I.

The priority document, EP 17290101.9 (07 August 2017), was available at the time of establishing the present opinion.
The content of the priority document is almost identical with that of the international application.
A few minor additions are noted, see for instance the paragraph bridging pages 1-2, some aspects in the list on pages 2-4, and the explicit mention of C16-C17 fatty acids and hydroxyalkanoates, such as polyhydroxyalkanoates and polyesters, on pages 9 and 24-25.

II.

It should be kept in mind that relevant E-documents, if any, may still be published up to about February 2019/February 2020, depending on the priority right for claimed subject-matter.

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The following document will be referred to:

D1 = Amyris Project Summary; 2013, pages 1-111

1. Novelty (Article 33(2) PCT)

The claimed methods according to (i) Claim 1, characterized by the low solubility in water, and (ii) the related Claim 17, characterized by the evaporation steps, appear to be novel over the prior art.

2. Inventive step (Article 33(3) PCT)

The closest prior art, at least with regard to the preferred compound farnesene, seems to be D1 (a report by one of the Applicants), which discloses a farnesene recovery process comprising solid-liquid centrifugation, de-emulsification (with surfactant addition), and liquid-liquid separation, resulting in a crude farnesene leaving for evaporation, see page 68.

The present process, as exemplified in Example 1, differs considerably from the above and can be seen as a further development that (as stated in the Application) does not need the addition of any chemicals, see pages 2, 7, 12, and 25.

To conclude:
A preliminary positive opinion has been given in Box V for both novelty and inventive step.

Note, however, a cautionary remark in Box VIII:b about the scope of Claim 1.

Re item VI:

Certain documents cited (no separate item here)

Re item VIII:

Certain observations on the international application

a)

The "optionally..." and "preferably..." in Claims 1, 3, 6, 14, 16, and 17 have no limiting function.

A claim stands or falls by its broadest interpretation and these preferences should thus be deleted.

Such options can be made the subject of separate dependent claims.

b)

It is considered that Claims 1 and 17 should be better defined in order to reflect the actual contribution to the art.

Moreover, all the essential features of the claimed process should be included (as applicable).

Note that Claim 1 only requires "drying" the fermentation medium (or a fraction or a concentrate thereof) to generate a gaseous phase, and recovering the product.

This is not clearly distinguishable from e.g. "distillation".

A reasonable broadening should be accepted, but what this could be has to be settled at a later stage.

c)

Claim 17 does not include the solubility feature used in Claim 1.

d)

The Description must ultimately be adapted to correspond to any later accepted set of claims.

Further, the terms "embodiment" and "invention" should only be used in connection with subject-matter that clearly falls under the claims.

Still further, the solubility feature of Claim 1 is not referred to in the Description as a limiting feature; reference is made to higher levels on e.g. pages 2 and 8.

Note that later amendments, during an examination phase, may not be accepted (even if supported) if it broadens the searched scope.
It is not acceptable to enter the search stage with restricted claims and later broaden at will.

e)

The list on pages 2-4 can be seen as providing "pseudo claims", which are not acceptable.

f)

The "incorporated by reference", pages 5 and 9, will not be acceptable in a later European phase.

Reference may be made to published documents, but not for "incorporation".

g)

The sole Example is apparently a computer simulation.

This is acceptable, but the lack of technical data means that there is no evidence of a successful result in real practice for all the compounds in question.

h)

The most important documents of the Search Report should be indicated in the Description as relevant background art, Rule 5.1(a)(ii) PCT.

i)

The Search Report has been based on that for the priority document, but two further documents have been added.

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