

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.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.
PCT/US2022/049186

International filing date (day/month/year)
08.11.2022

Priority date (day/month/year)
10.11.2021

International Patent Classification (IPC) or both national classification and IPC
INV. C09K8/74 C09K8/82

Applicant
SASOL CHEMICALS GMBH

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 43bis.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 notified the International Bureau under Rule 66.1bis(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:



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Date of completion of
this opinion

see form
PCT/ISA/210

Authorized Officer

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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.
 - b. ☐ furnished subsequent to the international filing date for the purposes of international search (Rule 13*ter*.1(a)),
 - ☐ accompanied by a statement to the effect that the sequence listing does not go beyond the disclosure in the international application as filed.
4. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established to the extent that a meaningful opinion could be formed without a WIPO Standard ST.26 compliant sequence listing.
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	<u>1-35</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>1-35</u>
	No: Claims	
Industrial applicability (IA)	Yes: Claims	<u>1-35</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

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

Reference is made to the following document:

D1 US 2017/051195 A1 (VANZIN DAVID [US] ET AL) 23 February 2017
(2017-02-23)

1. Novelty

1.1 Since none of the documents cited in the search report disclose all the features of independent claims 1, 17, 18, it is considered that said claims are novel over said prior art documents.

2. Inventive Step

2.1 The document D1 is regarded as being the closest prior art to the subject matter of claim 1, and discloses a method for treating a hydrocarbon-bearing formation comprising:

blending an emulsifying agent, a base oil and an acid to produce an acid-in-oil emulsion, the acid-in-oil emulsion being substantially devoid of priority pollutants; and

discharging the acid-in-oil emulsion into a downhole hydrocarbon-bearing well formation, where the acid-in-oil emulsion is operative to stimulate hydrocarbon production (cl. 20).

According to claim 21, the oil phase represents the external phase.

Example 1 shows a composition comprising a polyisobutylen-succinic acid ethanolamide as primary emulsifier, together with the dispersant lauryl ethoxylate.

The subject matter of claim 1 therefore differs from the disclosure of D1 in that a different non-ionic surfactant, namely a surfactant comprising propoxy groups, is used.

2.1.1 The examples show that surfactants containing less than the claimed number of propoxy units, or even no propoxy units at all, lead to inferior stability of the resultant emulsion at high temperature. A technical effect is therefore acknowledged.

The problem to be solved by the present application may therefore be regarded as the provision of an acidic emulsion fluid with enhanced temperature stability.

2.1.2 The solution proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT), for the following reasons:

Neither D1 nor any other prior art document found in the search suggests to use a propoxylated surfactant with the specified number of propoxy units and the specified HLB in order to improve the temperature stability of acidic invert emulsions.

The same argumentation applies, *mutatis mutandis*, for independent claims 17, 18 and for dependent claims 2-16, 19-35, which are therefore considered to involve an inventive step.

Re Item VII

Certain defects in the international application

1. The expression "incorporated by reference", used on p. 1, 2 of the description, is unclear (Art. 5 PCT and GL 4.26) and should be deleted.

Re Item VIII

Certain observations on the international application

The application does not meet the requirements of Article 6 PCT, because claims 9, 11-15, 28-32, 34 are not clear.

1. Claim 34 does not meet the requirements of Article 6 PCT because the matter for which protection is sought is not clearly defined. The claim attempts to define the subject matter in terms of the result to be achieved, which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this result.

In the absence of any clear technical features, said claim is therefore considered to be non-limiting.

2. The features in product claims 9, 11-15 appear to relate to a method of preparing the product rather than clearly defining the product per se in terms of its technical features, since they use terms such as "added", "diluted" etc. The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 6 PCT. In fact, it is not unambiguously clear whether said wording means that the specified components are present in the specified amounts, or whether only an intermediate preparation step is described.

The same objection is raised for use claims 28-32.