

From the INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing <i>(day/month/year)</i> 01 June 2016	
Applicant's or agent's file reference 0000077670	FOR FURTHER ACTION See paragraph 2 below
International application No. PCT/EP2016/055650	International filing date <i>(day/month/year)</i> 16 March 2016
Priority date <i>(day/month/year)</i> 26 March 2015	
International Patent Classification (IPC) or both national classification and IPC A61K 8/49(2006.01)i; A61Q 5/02(2006.01)i	
Applicant BASF SE	

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 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/	Date of completion of this opinion	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:
 - 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:

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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		
1. Statement			
Novelty (N)	Claims	1-15	YES
	Claims		NO
Inventive step (IS)	Claims	1-15	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-15	YES
	Claims		NO
2. Citations and explanations :			
See Supplemental Box			

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Box V**A. Independent claims:**

1. The use of esters of 2,5-di(hydroxymethyl)tetrahydrofuran of general formula (I)... as a pearlescent wax in aqueous, surfactant preparations.
6. Pearlescent concentrates for aqueous, surfactant preparations containing
 - a) 7.5 to 35 wt.% esters of 2,5-di(hydroxymethyl)tetrahydrofuran of general formula (I) according to claim 1
 - b) 0.1 to 60 wt.% anionic, non-ionic, cationic, ampholytic or zwitterionic surfactants or combinations thereof
 - c) 0-40 wt.% polyols
 - d) ad 100 wt.% water.
10. A method for producing pearlescent concentrates according to any of claims 6 to 9, characterised in that the esters of 2,5-di(hydroxymethyl)tetrahydrofuran of general formula (I) according to claim 1 and the surfactants (b) according to claim 6 and optionally the polyols (c) and ad 100 wt.% water are heated, while being stirring, to temperatures which are 5 to 20°C above the melting point of the ester (a), are stirred, and then the mixture is cooled, while being continuously stirred, to approximately room temperature (20 to 23°C).
11. A method for producing pearlescent concentrates according to any of claims 6 to 9, characterised in that the esters of 2,5-di(hydroxymethyl)tetrahydrofuran of general formula (I) according to claim 1 are stirred into an aqueous paste of the surfactants (b) according to claim 6, heated to temperatures which are 5 to 20°C above the melting point of the ester, stirred and then adjusted to the desired concentration using additional water and optionally polyols.
12. The use of the pearlescent concentrates according to any of claims 6 to 9 for producing aqueous, surfactant preparations having a pearlescent effect.
14. An aqueous, surfactant preparation having a pearlescent effect containing 0.2 to 10 wt.% pearlescent concentrate according to any of claims 6 to 9.
15. An aqueous, surfactant preparation containing 0.015 to 3.5 wt.% esters of 2,5-di(hydroxymethyl)tetrahydrofuran of general formula (I) according to claim 1.

B. Prior art

D1	US 3 014 927 A (GARBER JOHN D ET AL) 26 December 1961 (1961-12-26)
D2	US 6 235 702 B1 (ANSMANN ACHIM [DE] ET AL) 22 May 2001 (2001-05-22)
D3	EP 1 067 175 A1 (COGNIS DEUTSCHLAND GMBH [DE]) 10 January 2001 (2001-01-10)
D4	DE 198 10 888 A1 (HENKEL KGAA [DE]) 14 October 1999 (1999-10-14)

C. Novelty (PCT Article 33(2))

D1 is the only document which discloses products of formula 1 according to claim 1. However, said document does not describe any pearlescent properties. D1 does not disclose a combination with surfactants either.

Therefore the subject matter of claims 1-15 is novel.

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

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Supplemental Box

According to the description, the problem addressed by the present invention is that of providing new pearlescent waxes which are free-flowing and environmentally sustainable, and are sufficiently biodegradable. The pearlescent agents can also easily be incorporated.

D2-D4 can all be considered to be the closest prior art since they all disclose pearlescent waxes.

The pearlescent waxes from the prior art are fat derivatives; some are ester derivatives, but none of these are esters of a THF derivative.

The tests on pages 24-26 show that di(hydroxymethyl)-THF monoesters or diesters according to formula I of claim 1 are pearlescent agents. The effectiveness thereof is comparable with that of ethylene glycol distearate (a derivative which is conventionally used).

The problem addressed by the present invention can therefore be considered that of providing alternative pearlescent agents.

The pearlescent agents from the prior art are structurally very far removed from the esters from the present claim 1, none of which has a furan or oxirane unit. Since not all fat derivatives or ester derivatives are pearlescent agents, the use of esters from claim 1 as a pearlescent wax in aqueous, surfactant preparations is inventive. Since all the claims contain this feature, the subject matter thereof is also inventive.