

From the INTERNATIONAL SEARCHING AUTHORITY

To:

PCTWRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference 2018P00152WO		Date of mailing (day/month/year)	25 March 2020
		FOR FURTHER ACTION See paragraph 2 below	
International application No. PCT/EP2020/050179	International filing date (day/month/year) 07 January 2020	Priority date (day/month/year) 10 January 2019	
International Patent Classification (IPC) or both national classification and IPC C10L 1/28(2006.01)i; C08G 77/18(2006.01)i			
Applicant EVONIK OPERATIONS 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 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

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/EP2020/050179

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 43bis.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 13ter.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 13ter.1(a)).
 - ☐ on paper or in the form of an image file (Rule 13ter.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:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/EP2020/050179

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

1. Statement

Novelty (N)	Claims	1-14	YES
	Claims		NO
Inventive step (IS)	Claims	1-14	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-14	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**Reasoned statement with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

- [1] Reference is made to the following documents:

D1	DE 10 2004 018926 A1 (GOLDSCHMIDT GMBH [DE]) 17 November 2005 (2005-11-17)
D2	DE 103 14 853 A1 (GOLDSCHMIDT AG TH [DE]) 14 October 2004 (2004-10-14)
D3	DE 10 2007 031287 A1 (EVONIK GOLDSCHMIDT GMBH [DE]) 8 January 2009 (2009-01-08), cited in the application

- [2] Novelty (PCT Article 33(2)) D1, D2, D3 describe in the examples E1, E2 and Tab. organomodified polysiloxanes and the use of these polysiloxanes for defoaming diesel fuel.
D1: $\text{Me}_3\text{Si}-(\text{OSiMe}_2)_a-(\text{OSiMeR}_2)_b-(\text{OSiMeR}_3)_c-\text{O}-\text{SiMe}_3$ (I) produced from MD150D'35M' by hydrosilylation with allylpolyethylene oxide-propylene oxide 80/20 copolymer having a molar mass of 1400 g/mol, allylpolyethylene oxide-butylene oxide 12/4 copolymer and allylphenol. Consequently $a = 150$, R and R1 = methyl, R2 = formula (II) and R3 = formula (III) of claim 1. Calculation of stoichiometric usage amounts gives $b=26.4$, $c = 8.6$, d, e, f = values between 1 and 60 and $g = 0$.
 $a + b + c + 2 = 187$ und $a/(b+c) = 4.4$. D2: reaction of MD190DH50M with allylpolypropylene oxide having a molar mass of 1800 g/mol, allylpolyethylene oxide-butylene oxide 12/4 copolymer and allylphenol.
 $a/(b+c) = 190/50 = 3.8$. D3 describes in examples E1/tables on page 12 organomodified polysiloxanes by reaction of an SiH-functional polydimethylsiloxane $\text{Me}_3\text{Si}-(\text{OSiMe}_2)_a-(\text{OSiMeH})_x-\text{O}-\text{SiMe}_3$ ($a = 155$, $x = 35$) having a molar mass of about 13600 g/mol (I) with allylpolyethylene oxide-propylene oxide 80/20 copolymer having a molar mass of 1400 g/mol, allylpolyethylene oxide-butylene oxide 12/4 copolymer and allylphenol. $a = 155$, $b+c = 35$, R and R1 = methyl, R2 = formula (II) of claim 1 of the present application where $f=g=0$ and $g=0$ and R3 = formula (III) of claim 1.
 Calculation of usage amounts of the SiH-functional polydimethylsiloxane, the allylpolyethers and the allylphenol gives in example E1: $b=26.4$, $c = 8.6$, d, e, f = between 1 - 60, $g = 0$ and $a + b + c + 2 = \text{about } 190$ and $a/(b+c) = 5.4$, i.e. less than 7.
 Independent claims 1, 6, 9 and 14 are therefore not novel.
- [3] Inventive step (PCT Article 33(3))
 D3 is the closest prior art.
 As reported hereinabove D3 discloses organomodified polysiloxanes and the use thereof for defoaming diesel fuel containing biodiesel.
 The subject matter of independent claims 1, 6, 9 and 14 differs from D3 in terms of the ratio $a/(b+c)$ in formula (I) which is greater than 7.
 Since the present application shows improved efficacy of the organomodified polysiloxane defoamers (example defoamer 1) compared to the defoamers in D3 (example 3 = defoamer E1 from D3) the problem addressed by the present invention may be considered that of providing improved organomodified polysiloxane defoamers and inventive step may be acknowledged since there is no indication in the prior art that adjustment of the ratio of the alkyl side groups ($=a$), the polyether side groups ($=b$) and the aromatic side groups ($=c$) in the ratio $a/(b+c)$ greater than 7 could allow optimization of the organomodified polysiloxane defoamers known from D1 to D3.