

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**
(PCT Rule 43*bis*.1)

To:

see form PCT/ISA/220

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/US2017/039640

International filing date (day/month/year)
28.06.2017

Priority date (day/month/year)
30.06.2016

International Patent Classification (IPC) or both national classification and IPC
INV. A01N47/12 A01N33/04

Applicant
DOW GLOBAL TECHNOLOGIES LLC

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 notified 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:



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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:
 - 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. II Priority

1. The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.
2. This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of

the entire international application

claims Nos. 1, 3-5, 7

because:

the said international application, or the said claims Nos. relate to the following subject matter which does not require an international search (*specify*):

the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 3, 4, 7 are so unclear that no meaningful opinion could be formed (*specify*):

see separate sheet

the claims, or said claims Nos. 1, 5 are so inadequately supported by the description that no meaningful opinion could be formed (*specify*):

see separate sheet

no international search report has been established for the whole application or for said claims Nos.

a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

furnish a sequence listing in the form of an Annex C/ST.25 text file, and such listing was not available to the International Searching Authority in the form and manner acceptable to it; or the sequence listing furnished did not comply with the standard provided for in Annex C of the Administrative Instructions.

furnish a sequence listing on paper or in the form of an image file complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in the form and manner acceptable to it; or the sequence listing furnished did not comply with the standard provided for in Annex C of the Administrative Instructions.

pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rule 13*ter*.1(a) or (b).

See Supplemental Box for further details

Box No. V Reasoned statement under Rule 43bis.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>2, 6</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>2, 6</u>
	No: Claims	
Industrial applicability (IA)	Yes: Claims	<u>2, 6</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VI Certain documents cited

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

and / or

2. Non-written disclosures (Rules 43bis.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

- D1 WO 03/062149 A2 (LONZA AG [US]; LONZA AG [CH]; LUDENSKY MICHAEL [US]; HILL CHRISTOPHER) 31 July 2003 (2003-07-31)
- D2 WO 2016/137830 A1 (DOW GLOBAL TECHNOLOGIES LLC [US]) 1 September 2016 (2016-09-01)

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

- 1 See objections under Re Item VIII

Re Item V

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

- 2 Novelty

D1 discloses that N-(3-Aminopropyl)-N-dodecylpropane-1,3-diamine ("Diamine") is used as antimicrobial agent in combination with a further biocide to control the growth of microorganisms in an aqueous composition (see example 1 and claims 16 to 21).

D1 does not disclose a composition comprising Diamine and IPBC as presently claimed.

The present application is thus considered to meet the criteria of Article 33(1) PCT, because the subject-matter of claims 2 and 6 is new in the sense of Article 33(2) PCT.

3 Inventive step

In view of D1 which represents the closest prior art the problem to be solved by the present application is the provision of an alternative, synergistic antimicrobial composition.

The solution consists in the composition according to present claim 2, which comprises "Diamine" and IPBC.

As shown in present table 1 and table 2 the problem has been solved: the claimed composition shows synergistic activities.

The claimed composition is based on an inventive step: the skilled person gets no information from D1 that IPBC can be used in combination with "Diamine" to get a synergistic active composition.

The subject matter of present claims 2 and 6 is thus based on an inventive step in the sense of Article 33(3) PCT.

4 The requirement of Article 33(4) PCT are met for claims 2 and 6

Re Item VI

Certain documents cited

- 1 D2 discloses that N-(3-Aminopropyl)-N-dodecylpropane-1,3-diamine ("Diamine") is used as antimicrobial agent in combination with a dithio-2,2-bis-benzmethylamide to control the growth of microorganisms in an aqueous composition (see claims 1 to 6).

D2 does not disclose a composition comprising Diamine and IPBC as presently claimed.

Re Item VIII

Certain observations on the international application

1 Claims 1 and 5:

Claim 1 is defined by a "synergistic" composition without defining any range, ratio or concentration of the active compounds "Diamine" and IPBC. Since the composition as claimed has to exert a synergistic activity contrary to a solely additive activity the skilled person has to carry out a multitude of experiments to find out those compositions comprising the two active compounds which show the wanted activity and not only the additive activity.

As shown in the performed tests (tables 1 and 2) a certain ratio of the two active compounds must be present to exert a synergistic activity. Only if this ratio is given a synergistic activity is obtained.

Present claim 1 and claim 5 do therefore not meet the requirement of Article 5 PCT due to lack of sufficiency of disclosure.

2 Claims 3 and 4:

The claimed method is not further defined; it is thus unclear how the claimed method can be carried out.

Claims 3 and 4 do thus not meet the requirement of Article 6 PCT due to lack of clarity.

3 Claim 7:

Claim 7 refers back to claim 4.

Claim 4 is not clear in the sense of Article 6 PCT.

Additionally a coating composition is not defined in claim 4.

4 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in D1 is not mentioned in the description, nor are these documents identified therein.