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European Patent Office

80298 München

Ludwigshafen, 21.11.2022

International Patent Application PCT/EP2022/052699

BASF SE

Our Reference: M/62083-PCT

**In response to the Written Opinion of the International Searching
Authority of April 25, 2022:**

I. Documents and Requests

Enclosed we submit replacement pages 40 to 43 with an amended set of claims 1 to 20.

It is respectfully requested to start the international preliminary examination on the basis of said replacement pages together with description pages 1 to 39 as originally filed.

To assist the International Preliminary Examining Authority, we attach a marked-up copy of the replacement pages showing all amendments made to the previous claims.

In case the International Searching Authority is not yet prepared to acknowledge patentability of the claimed invention, we would prefer receiving a further written opinion. In the event that the Examiner does not intend to issue a further written opinion, we request that the Examiner contact the undersigned

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by telephone prior to drawing up the International Preliminary Report on Patentability.

II. Amendments

Amended claim 1 is based on claim 1 as filed, which is amended by incorporating dipropylene glycol (B.3) as a further mandatory component and by limiting the value of x of formula (I) as from 1 to 10. The amendments are supported by page 9, lines 5-13, as originally filed, and by claim 9, as originally filed, respectively. Furthermore, the ether unit of formula (I) is renamed as A' to avoid confusion with respect to the herbicidal compound (A).

Amended claims 7 and 8 are based on claims 7 and 8 as filed, which have been adapted to the amended claim 1. Further support is found on page 10, lines 4-23 of the specification as filed.

Amended claims 13 and 14 are based on claims 14 and 15 as filed, wherein it was clarified that the list of amines refers to amine itself, not to its protonated form, which is merely a clarification.

Amended claim 18 is based on claim 19 as filed, which has been adapted to the amended claim 1.

Amended claims 2-6, 9-12, 15-17, 19 and 20 correspond to claims 2-6, 10-13, 16-18, 20 and 21 as filed.

Therefore, the claimed subject matter does not extend the disclosure of the application as filed.

III. Novelty

In the written opinion, novelty of the claimed invention has already been acknowledged. Thus, no further observations seem to be necessary.

IV. Inventive Step

In the written opinion, claim 1 was objected for lack of an inventive step over D4. Especially, it was doubted that the technical effect demonstrated by the inventive examples of the present application is achieved over the entire claim scope, i.e. with respect to a fatty alcohol sulfate ester salt (x of formula (I) = 0) and the presence of dipropylene glycol. We believe that this objection no longer applies to amended claim 1.

Amended claim 1 is directed to an aqueous liquid herbicidal composition comprising

- (A) certain amount of herbicidal compound selected from glufosinate, a salt thereof, preferably the ammonium salt, and/or its respective (L-)isomers;
- (B) a mixture of at least two alcoholic solvents, comprising
 - (B.1) the monohydric alcohol (B.1) which is selected from methanol, ethanol and isopropanol, and any mixture thereof; and
 - (B.2) the polyhydric alcohol (B.2) which is selected from 1,2-propylene glycol and glycerol, and a mixture thereof;
- (C) water; and
- (D) certain amount of at least one fatty alcohol ether sulfate salt of formula (I), wherein x of formula (I) is from 1 to 10;

where the aqueous liquid herbicidal composition further contains dipropylene glycol as a solvent (B.3).

As correctly observed in the written opinion, D4 qualifies as the closest prior art. The subject matter of amended claim 1 differs from the aqueous liquid herbicidal composition of D4 by the combination of the solvents B.1 to B.3. In particular, D4 fails to teach a monohydric alcohol B.1.

The written opinion acknowledges that the aqueous liquid herbicidal composition of inventive example 1 comprising *inter alia* ethanol (B.1) exhibits clear solutions, i.e. high stability under a cold storage condition, whereas the comparative example 3, which corresponds to the solvent mixture of D4, shows formation of gel meaning instability of formulation under the cold storage condition.

Therefore, the problem to be solved by the claimed invention over D4 is the provision of an aqueous liquid herbicidal composition with improved stability under cold storage conditions. This problem is solved by the aqueous liquid herbicidal compositions according to the amended claim 1.

The technical effect, i.e. high stability of the aqueous composition, is also achieved over entire scope of the amended claim 1. Inventive examples 1 to 9, which demonstrate the technical effect of the present invention, comprise ingredients representing all essential components of amended claim 1, especially dipropylene glycol (B.3) and fatty alcohol ether sulfate salt of formula (I) (D). Therefore, it is credible that the problem over D4 is solved over the entire scope of the amended claim 1.

The written opinion acknowledges that D4 does not render the claimed invention obvious. Indeed, none of the references D1, D2 or D4 suggests the inventive aqueous liquid herbicidal compositions, especially the combination of the solvents B.1, B.2 and B.3 in presence of at least one fatty alcohol ether sulfate salt of formula (I). In particular, there is nothing in D1, D2 and D4 from which a skilled person could have reasonably expected that such a composition will be stable under cold storage condition. Therefore, the subject matter of amended claim 1

and its dependent claims 2 to 17 is based on an inventive step over prior art. The same arguments apply also to the amended claims 18 to 20 and thus, their subject matter also involves an inventive step.

V. Clarity

It is believed that the objection for lack of clarity has been overcome by the amendments made to the claims 1, 14 and 15, as filed. Therefore, no further observations seem to be necessary in this regard.

(Michael Pohl)

sn

Enclosures:

Replacement pages 40 to 43 (claims 1 to 20)

Marked-up copy of replacement pages

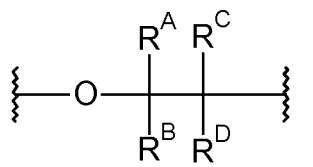
Claims

1. An aqueous liquid herbicidal composition comprising

- 5 (A) 5 to 45 weight %, based on the total weight of the composition, of one herbicidal compound selected from glufosinate, a salt thereof, preferably the ammonium salt, and/or its respective (L-)isomers
- 10 (B) a mixture of at least two alcoholic solvents, comprising a monohydric alcohol (B.1) and a polyhydric solvent (B.2), wherein
 (B.1) the monohydric alcohol B.1 is selected from methanol, ethanol and isopropanol, and any mixture thereof;
 and
 (B.2) the polyhydric alcohol B.2 is selected from 1,2-propylene glycol and glycerol, and a mixture thereof;
- 15 (C) water
- and
- 20 (D) 15 to 70 weight %, based on the total weight of the composition, of at least one compound of formula (I)



- 25 wherein
 R is C₁₀-C₁₆-alkyl, C₁₀-C₁₆-alkenyl, or C₁₀-C₁₆-alkynyl;
 A' is a group



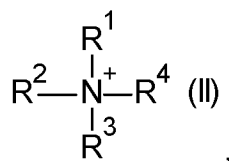
- 30 wherein
 R^A, R^B, R^C, and R^D are selected from H, CH₃, or CH₂CH₃ with the proviso that the sum of C-atoms of R^A, R^B, R^C, and R^D is 0, 1 or 2;
 M⁺ is a monovalent cation selected from the group of alkali metal ions, NH₄⁺ and an ammonium cation of a primary, secondary or tertiary amine or a quaternary ammonium cation, or a mixture thereof; and
- 35 x is a number selected from 1 to 10.

where the aqueous liquid herbicidal composition further contains dipropylene glycol as a solvent (B.3).

- 40 2. The liquid herbicidal composition according to claim 1, wherein the composition comprises 1 to 20 weight %, preferably 2 to 15 weight% or more preferably 2 to 10 weight % of solvent B.1.
3. The liquid herbicidal composition according to claim 1 or 2, wherein

the composition comprises 1 to 30 weight %, preferably 2 to 20 weight % or more preferably 2 to 15 weight % of solvent B.2.

4. The liquid herbicidal composition according to claim 1, 2 or 3, wherein
5 the composition comprises 10 to 40 weight % of the herbicidal compound (A).
5. The liquid herbicidal composition according to any of the preceding claims, wherein
the solvent B.1 is ethanol.
- 10 6. The liquid herbicidal composition according to any of the preceding claims, wherein
the solvent B.2 is propylene glycol.
7. The liquid herbicidal composition according to claim 1 comprising
 - 15 A) 10 to 40 weight % of the herbicidal compound selected from glufosinate, a salt thereof, preferably the ammonium salt, and/or its respective (L-)isomers;
 - B.1) 2 to 15 weight % of ethanol;
 - B.2) 2 to 20 weight % of 1,2-propylene glycol
 - B.3) 5 to 30 weight % of dipropylene glycol; and
 - 20 C) at least 7 weight % water.
8. The liquid herbicidal composition according to claims 1 comprising
 - A) 13 to 36 % weight % of the herbicidal compound selected from glufosinate, a salt thereof, preferably the ammonium salt, and/or its respective (L-)isomers;
 - 25 B.1) 2 to 10 weight % of ethanol;
 - B.2) 2 to 15 weight % of 1,2- propylene glycol;
 - B.3) 5 to 30 weight % of dipropylene glycol; and
 - C) at least 8 weight % of water.
9. The liquid herbicidal composition according to any one of the preceding claims, wherein
30 the index x in compound of formula (I) is from 1 to 3.
10. The liquid herbicidal composition according to any one of the preceding claims, wherein
in formula (I) R^A , R^B , R^C , and R^D are each H.
- 35 11. The liquid herbicidal composition according to any one of the preceding claims, wherein
the cation M^+ is an ammonium cation of a primary, secondary, or tertiary amine, or a quaternary ammonium cation, where M^+ contains exactly one nitrogen atom per molecule.
- 40 12. The liquid herbicidal composition according to any one of the preceding claims, wherein
the cation M^+ is of formula (II)



wherein

R^1 , R^2 , R^3 and R^4 are H or C_1 - C_{10} -alkyl, which is unsubstituted or substituted with OH, C_1 - C_{10} -alkoxy, or hydroxy- C_1 - C_{10} -alkoxy; or

two of the substituents R^1 , R^2 , R^3 , and R^4 form, together with the N-atom to which they are bound, a 5-, or 6-membered, saturated, partially- or fully unsaturated heterocycle containing optionally and additionally one or two oxygen or sulfur atoms, wherein said sulfur atom(s) are independently from one another oxidized or non-oxidized.

13. The liquid herbicidal composition according to any one of the preceding claims, wherein the cation M^+ is a protonated amine, wherein the amine is selected from ethanolamine, diethanolamine, diglycolamine, 1-aminopropan-2-ol, 2-dimethylaminoethanol, 2-(butylamino)ethanol, 2-diethylaminoethanol, 2-(tert-butylamino)ethanol, N-(tert-butyl)diethanolamine, triethanolamine, 2-ethylaminoethanol, 2-aminoheptan, triisopropylamine, N-(2-hydroxyethyl)morpholin, N-methylmorpholine, N-butyl diethanolamin or 2-(dibutylamino)ethanol, or any mixture thereof.
14. The liquid herbicidal composition according to claim 13, wherein the cation M^+ is a protonated amine, wherein the amine is selected from ethanolamine, diethanolamine, diglycolamine, 1-aminopropan-2-ol, 2-dimethylaminoethanol or triethanolamine, or any mixture thereof.
15. The liquid herbicidal composition according to any one of claims 1 to 10, wherein the cation M^+ is sodium.
16. The liquid herbicidal composition according to any one of the preceding claims, wherein composition comprises
- A) 13 to 36 weight % the herbicidal compound selected from glufosinate, a salt thereof, preferably the ammonium salt, and/or its respective (L-)isomers;
 - B.1) 2 to 10 weight % of ethanol;
 - B.2) 2 to 15 weight % of 1,2-propylene glycol;
 - C) 8 to 36 weight % water;
- and
- D) 15 to 70 weight % of a compound of formula (I).
17. The liquid herbicidal composition according to claim 16, wherein composition further comprises
- E) up to 20 weight % of other ingredients selected from further solvents, pigments, anti-foaming agents, anionic, nonionic, cationic or zwitterionic surfactants as thickeners.
18. Method for producing an aqueous liquid herbicidal composition as claimed in claims 1 to 17 comprising the steps of
- (a) providing a solvent B.1 as defined in claim 1,
 - (b) providing a solvent B.2 as defined in claim 1,
 - (c) combining the two solvent components B.1 and B.2 to a mixture,
 - (d) combining the obtained mixture of the solvent components with water, the herbicidal compound A, dipropylene glycol and the compound of the formula (I) such that a composition as defined in any one of claims 1 to 17 is obtained.
19. Method for controlling undesired plant growth and/or controlling harmful plants, comprising the step of applying the liquid herbicidal composition as defined in any of claims 1 to 17

onto the undesired plants or the harmful plants, on parts of the undesired plants or the harmful plants, or on the area where the undesired plants or the harmful plants grow.

- 5 20. Use of the liquid herbicidal composition as defined in any of claims 1 to 17 in the field of agriculture.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 202572WO01-62083-PCT	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/EP2022/052699	International filing date (day/month/year) 04.02.2022	Priority date (day/month/year) 05.02.2021	
International Patent Classification (IPC) or national classification and IPC INV. A01N57/20			
Applicant BASF SE			
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of <u>8</u> sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☒ (sent to the applicant and to the International Bureau) a total of <u>8</u> sheets, as follows: ☒ sheets of the description, claims and/or drawings which have been amended and/or sheets containing rectifications authorized by this Authority, unless those sheets were superseded or cancelled, and any accompanying letters (see Rules 46.5, 66.8, 70.16, 91.2, and Section 607 of the Administrative Instructions). ☐ sheets containing rectifications, where the decision was made by this Authority not to take them into account because they were not authorized by or notified to this Authority at the time when this Authority began to draw up this report, and any accompanying letters (Rules 66.4bis, 70.2(e), 70.16 and 91.2). ☐ superseded sheets and any accompanying letters, where this Authority either considers that the superseding sheets contain an amendment that goes beyond the disclosure in the international application as filed, or the superseding sheets were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in item 4 of Box No. I and the Supplemental Box (see Rule 70.16(b)). b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing, in the form of an Annex C/ST.25 text file, as indicated in the Supplemental Box Relating to Sequence Listing (see paragraph 3ter of Annex C of the Administrative Instructions).			
4. This report contains indications relating to the following items: ☒ Box No. I Basis of the report ☐ 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 Article 35(2) with regard to novelty, inventive step or 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			
Date of submission of the demand 21.11.2022		Date of completion of this report 20.04.2023	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Fax: +49 89 2399 - 4465		Authorized officer Habermann, Jörg Telephone No. +49 89 2399-2849 	

Reference is made to the following documents:

- D1 WO 2015/170876 A1 (SUNMOON GREEN SCIENCE LTD [KR]) 12
November 2015 (2015-11-12)
- D2 CN 107 303 595 B (SHANGHAI ZHEDIAN APPLIANCE CO LTD) 29
January 2019 (2019-01-29)
- D3 WO 2015/114483 A1 (UPL LTD [IN]) 6 August 2015 (2015-08-06)
- D4 WO 2019/149514 A1 (CLARIANT INT LTD [CH]) 8 August 2019
(2019-08-08)

Re Item I

Basis of the report

With the demand the applicant has filed an amended set of claims 1-20.

Present claim 1 is based on originally filed claims 1 and 9 in combination with the description as originally filed, p. 9, l. 5-13.

Present claims 2-6 are based on originally filed claims 2-6.

Present claim 7 is based on the description as originally filed, p. 10, l. 4-13.

Present claim 8 is based on the description as originally filed, p. 10, l. 15-23.

Present claims 9-15 are based on originally filed claims 10-16.

Present claim 16 is based on originally filed claim 17. However, since the claim depends from claim 1, the additional feature of the presence of dipropylene glycol as solvent (B. 3) is present. It must be noted however, that the application as originally filed does not allow to combine the generic presence of dipropylene glycol (*i.e.* its presence in virtually any amount) with the precise ranges and components as defined in claim 16. **Hence, the requirements of Article 34(2)(b) PCT are regarded not to have been met.**

Present claim 17 is based on originally filed claim 18.

Present claim 18 is based on originally filed claim 19 in combination with the description as originally filed, p. 34, l. 1-3.

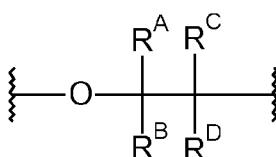
Present claims 19 and 20 are based on originally filed claims 20 and 21.

Re Item V

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

1 Novelty

The present application is directed to a composition comprising (A) glufosinate, a mixture of (B.1) a monohydric alcohol selected from methanol, ethanol and isopropanol and (B.2) a polyhydric alcohol selected from 1,2-propylene glycol and glycerol, (C) water, and (D) an alkali metal salt or an ammonium salt of a sulfuric acid monoester of formula (I) $(R-(A')_x-OSO_3^- M^+)$, wherein A' is a group



and R^A , R^B , R^C and R^D are hydrogen, methyl or ethyl wherein the sum of C-atoms of R^A , R^B , R^C and R^D is 0, 1 or 2, R is a C_{10-16} alkyl, C_{10-16} alkenyl or C_{10-16} alkynyl, and x ranges from 1 to 10.

Document D1 discloses a herbicidal composition comprising 2-10 wt.-% of glufosinate ammonium (50% solution), 2 wt.-% propylene glycol, 1.75 wt.-% isopropanol, 4 wt.-% sodium bis(2-ethylhexyl)sulfosuccinate, 5.25 wt.-% nonylphenol ethoxylate, 0.4 wt.-% phosphoric acid, 0.2 wt.-% of a defoamer, 10-20 wt.-% diquat dibromide (40% solution) and further comprising water in an amount of ca. 56-74 wt.-% (table 1; [0088]-[0089]).

D1 does not disclose a composition comprising an alkyl sulfate ester salt or an alkyl(oxyalkylene)sulfate salt of formula (I).

Document D2 discloses a herbicidal composition comprising 20 wt.-% ethanol, 15 wt.-% glycerol, 15 wt.-% ethylene glycol, 5 wt.-% phosphoric acid triethylester, 5 wt.-% glufosinate, 5 wt.-% silicone oil, 5 wt.-% sodium hydroxide, 5 wt.-% silver phosphate, 5 wt.-% of a quaternary ammonium salt, 5 wt.-% sodium tartrate and 15 wt.-% water ([0022]).

D2 does not disclose a composition comprising an alkyl sulfate ester salt or an alkyl(oxyalkylene)sulfate salt of formula (I).

Document D3 discloses aqueous herbicidal compositions comprising glufosinate ammonium, the monohydric alcohol 1-methoxy-2-propanol and the dihydric alcohol propylene glycol. Further, the compositions comprise an alkyl dimethylamine N-oxide and ammonium sulfate (examples 1 and 2; table 3). The cold storage stability of the compositions was tested by storing them for 14 days at -5 °C. Compositions comprising

the alkyl dimethylamine N-oxide and no ammonium sulfate became cloudy/hazy (table 4; p. 17, l. 2-5). Suitable solvents in general encompass glycols, aliphatic alcohols and/or alkoxy alcohols (p. 8, l. 19-24).

D3 does not disclose compositions comprising a monohydric alcohol selected from methanol, ethanol and isopropanol.

Document D4 discloses herbicidal compositions comprising 25.37 wt.-% glufosinate ammonium salt ("Pestizid A"), 2 wt.-% of the monohydric alcohol 1-methoxy-2-propanol ("Lösungsmittel"), 10 wt.-% of the dihydric alcohol 1,2-propylene glycol ("Cosolvens A"), 3.75-12.5 wt.-% lauryl ether sulfate sodium salt (Genapol LRO, "Adjuvant A1") and 36.55-46.55 wt.-% of water. The formulations remain stable when stored for two weeks at temperatures of -10 °C or 54 °C (example 5; table 4: formulations "D1"- "D4"). The use of combinations of solvents (e.g. optionally halogenated aliphatic/aromatic hydrocarbons, oils, ethers, amides, ketones, esters, lactams, lactates, carbonic acid diesters, nitriles or sulfoxides) comprising additionally alcohols such as methanol, ethanol, isopropanol or butanol is often possible (p. 21, l. 8 - p. 22, l. 11).

D4 does not disclose clearly and unambiguously compositions comprising a monohydric alcohol selected from methanol, ethanol and isopropanol.

The subject-matter of claims 1-20 is new in the sense of Article 33(2) PCT, since none of the documents discloses methods and/or compositions having the exact features claimed by the applicant.

2 Inventive Step

The present application does meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-20 does involve an inventive step in the sense of Article 33(3) PCT.

Document D4 is considered to be the prior art closest to the subject-matter of claim 1 and discloses an aqueous liquid herbicidal composition comprising (A) glufosinate ammonium salt and (B) a mixture of two alcoholic solvents comprising a monohydric solvent and 1,2-propylene glycol, (C) water and (D) lauryl ether sulfate sodium salt.

The subject-matter of claim 1 therefore differs from this known aqueous herbicidal composition in that instead of the monohydric alcohol 1-methoxy-2-propanol one of the monohydric alcohols methanol, ethanol or 2-propanol is envisaged.

The applicant has demonstrated that the stability of compositions comprising glufosinate ammonium and a high concentration of a lauryl ether sulfate ammonium salt as adjuvant is not given when the solvent mixture of according to D4 is used (comparative example

3 shows the formation of a gel). Replacing the monohydric alcohol 1-methoxy-2-propanol with ethanol under otherwise identical conditions leads to a clear solution that also is stable under cold storage conditions (example 1).

The problem to be solved by the present invention may therefore be regarded as provision of an improved glufosinate formulation with high amounts of adjuvant that is stable under cold storage conditions.

The solution proposed in claim 1 of the present application can be considered to involve an inventive step (Article 33(3) PCT).

Combinations of a monohydric solvent selected from methanol, ethanol and isopropanol and a polyhydric alcohol selected from glycerol and propylene glycol have been used in the art for aqueous formulations of glyphosate (D1, D2). However, these formulations make use of a different anionic surfactant additive, namely of sodium bis(2-ethylhexyl)sulfosuccinate (D1), or do not include an anionic surfactant additive (D2). Their teaching therefore does not necessarily provide any indication with regard to the stability of compositions comprising an anionic surfactant additive of present formula (I).

From the comparative examples provided in table MC.1 it may be seen that at high levels of lauryl ether sulfate salt, compositions using the solvent combination suggested in D4 lack cold storage stability (C.Ex.3). Such an effect could not have been predicted by a skilled artisan based on the teaching of the prior art. None of the documents cited provides any indication to this end. Also other solvent combinations where either the dihydric alcohol selected from glycerol and 1,2-propylene glycol or the monohydric alcohol selected from methanol, ethanol and isopropanol is absent led to physically unstable compositions forming two phases or precipitates (C.Ex.1, C.Ex.2, C.Ex.4 to C.Ex.9).

Since the liquid compositions according to the invention exhibit an unpredictable storage stability an inventive step may be recognised to the subject-matter of present claim 1. For the same reason, also claims 2-20 may be regarded to involve an inventive step.

3 Industrial Applicability

The subject-matter of the present application seems to be industrially applicable.

Re Item VI

Certain documents cited

Certain published documents

Application No Patent No	Publication date (day/month/year)	Filing date (day/month/year)	Priority date(valid claim) (day/month/year)
WO 2021/148302	29. July 2021	14. January 2021	06. October 2020 (EP 20200249.9)

WO 2021/148302 discloses a liquid aqueous herbicidal composition comprising (A) 16.5 wt.-% **glufosinate ammonium salt** ("pesticide A"), (B) 5.5 wt.-% **ethanol** ("monohydric alcohol B.1"), 3.21 wt.-% **propylene glycol** ("polyhydric alcohol B.2"), **water** (C), and (D) 57.9 wt.-% of an additive that is 82 wt.-% **laurylether (2EO) sulfate monoethanol ammonium salt** in **dipropylene glycol** ("additive D", *i.e.* 47.5 wt.-% compound of formula (I) and 10.4 wt.-% solvent B.3). Additionally, an **antifoaming agent** that is polydimethylsiloxane is present (example 11: composition L2).

The described composition is an aqueous liquid herbicide composition according to present claims 1-14, 16, 17, 19 and 20. These claims would not be regarded as novel under Article 54(3) EPC in the regional phase before the European Patent Office.

Re Item VIII

Certain observations on the international application

The applicant may wish to correct the grammatical error present in claim 1: "its respective (L)-isomers" should either read "their respective (L)-isomers" or "its respective (L)-isomer".

It is noted that the proviso made in claim 1 ("the sum of C-atoms of R^A, R^B, R^C and R^D is 0, 1 or 2") has been understood in such way that this applies to each repeating group A' individually for the cases where x is greater than 1.

With regard to claim 15 it is noted that the cation M⁺ cannot be sodium (which is a metal) but has to be the sodium cation.

Table C on page 34 of the description as filed lists the ingredients of the liquid herbicidal composition "according to the invention". The mandatory component (D) is missing. Hence, table C does not show compositions according to the invention.

Box No. I Basis of the report

1. With regard to the **language**, this report is based on
- ☒ 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 (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a) and (b))
2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

1-39 as originally filed

Claims, Numbers

1-20 filed with the demand for preliminary international examination

☐ a sequence listing - see Supplemental Box Relating to Sequence Listing.

3. ☒ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☒ the claims, Nos. 21
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since either they are considered to go beyond the disclosure as filed, or they were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in the Supplemental Box (Rules 70.2(c) and (c-bis)):
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
5. ☐ This report has been established:
- ☐ taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.1(d-bis) and 70.2(e)).
 - ☐ without taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91(Rules 66.4bis and 70.2(e)).

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2022/052699

6. ☒ With regard to top-up searches (Rules 66.1 *ter* and 70.2(f)):
- ☒ A top-up search was carried out by this Authority on 25.11.2022 (all discovered documents are listed in the Supplemental Box Relating to Top-up Search).
 - ☐ Additional relevant documents have been discovered during the top-up search.
 - ☐ No top-up search was carried out by this Authority because it would serve no useful purpose.
7. ☐ Supplementary international search report(s) from Authority(ies) has/have been received and taken into account in establishing this report (Rule 45bis.8(b) and (c)).

* If item 4 applies, some or all of those sheets may be marked "superseded".

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-20</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>1-20</u>
	No: Claims	
Industrial applicability (IA)	Yes: Claims	<u>1-20</u>
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rule 70.10)
and / or

2. Non-written disclosures (Rule 70.9)

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

Claims

1. An aqueous liquid herbicidal composition comprising

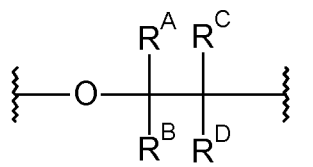
- 5 (A) 5 to 45 weight %, based on the total weight of the composition, of one herbicidal compound selected from glufosinate, a salt thereof, preferably the ammonium salt, and/or its respective (L-)isomers
- 10 (B) a mixture of at least two alcoholic solvents, comprising a monohydric alcohol (B.1) and a polyhydric solvent (B.2), wherein
 (B.1) the monohydric alcohol B.1 is selected from methanol, ethanol and isopropanol, and any mixture thereof;
 and
 (B.2) the polyhydric alcohol B.2 is selected from 1,2-propylene glycol and glycerol, and a mixture thereof;
- 15 (C) water
- and
- 20 (D) 15 to 70 weight %, based on the total weight of the composition, of at least one compound of formula (I)



25 wherein

R is C₁₀-C₁₆-alkyl, C₁₀-C₁₆-alkenyl, or C₁₀-C₁₆-alkynyl;

A' is a group



30 wherein

R^A, R^B, R^C, and R^D are selected from H, CH₃, or CH₂CH₃ with the proviso that the sum of C-atoms of R^A, R^B, R^C, and R^D is 0, 1 or 2;

M⁺ is a monovalent cation selected from the group of alkali metal ions, NH₄⁺ and an ammonium cation of a primary, secondary or tertiary amine or a quaternary ammonium cation, or a mixture thereof; and

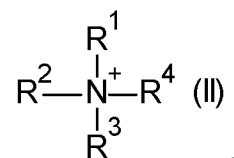
35 x is a number selected from $\neq 1$ to 10.

where the aqueous liquid herbicidal composition further contains dipropylene glycol as a solvent (B.3).

- 40 2. The liquid herbicidal composition according to claim 1, wherein the composition comprises 1 to 20 weight %, preferably 2 to 15 weight% or more preferably 2 to 10 weight % of solvent B.1.
3. The liquid herbicidal composition according to claim 1 or 2, wherein

the composition comprises 1 to 30 weight %, preferably 2 to 20 weight % or more preferably 2 to 15 weight % of solvent B.2.

4. The liquid herbicidal composition according to claim 1, 2 or 3, wherein the composition comprises 10 to 40 weight % of the herbicidal compound (A).
5. The liquid herbicidal composition according to any of the preceding claims, wherein the solvent B.1 is ethanol.
6. The liquid herbicidal composition according to any of the preceding claims, wherein the solvent B.2 is propylene glycol.
7. The liquid herbicidal composition according to claim 1 comprising
 - A) 10 to 40 weight % of the herbicidal compound selected from glufosinate, a salt thereof, preferably the ammonium salt, and/or its respective (L-)isomers;
 - B.1) 2 to 15 weight % of ethanol;
 - B.2) 2 to 20 weight % of 1,2-propylene glycol
 - B.3) 5 to 30 weight % of dipropylene glycol; and
 - C) at least 7 weight % water.
8. The liquid herbicidal composition according to claims 1 comprising
 - A) 13 to 36 % weight % of the herbicidal compound selected from glufosinate, a salt thereof, preferably the ammonium salt, and/or its respective (L-)isomers;
 - B.1) 2 to 10 weight % of ethanol;
 - B.2) 2 to 15 weight % of 1,2- propylene glycol;
 - B.3) 5 to 30 weight % of dipropylene glycol; and
 - C) at least 8 weight % of water.
- ~~9. The liquid herbicidal composition according to any of the preceding claims, wherein the index x in formula (I) is a number from 1 to 10.~~
- ~~10.9.~~ The liquid herbicidal composition according to any one of the preceding claims, wherein the index x in compound of formula (I) is from 1 to 3.
- ~~11.10.~~ The liquid herbicidal composition according to any one of the preceding claims, wherein in formula (I) R^A , R^B , R^C , and R^D are each H.
- ~~12.11.~~ The liquid herbicidal composition according to any one of the preceding claims, wherein the cation M^+ is an ammonium cation of a primary, secondary, or tertiary amine, or a quaternary ammonium cation, where M^+ contains exactly one nitrogen atom per molecule.
- ~~13.12.~~ The liquid herbicidal composition according to any one of the preceding claims, wherein the cation M^+ is of formula (II)



wherein

R^1 , R^2 , R^3 and R^4

are H or C_1 - C_{10} -alkyl, which is unsubstituted or substituted with OH, C_1 - C_{10} -alkoxy, or hydroxy- C_1 - C_{10} -alkoxy; or

two of the substituents R^1 , R^2 , R^3 , and R^4 form, together with the N-atom to which they are bound, a 5-, or 6-membered, saturated, partially- or fully unsaturated heterocycle containing optionally and additionally one or two oxygen or sulfur atoms, wherein said sulfur atom(s) are independently from one another oxidized or non-oxidized.

~~14.13.~~ The liquid herbicidal composition according to any one of the preceding claims, wherein

the cation M^+ is a protonated amine, wherein the amine is selected from ethanolamine, diethanolamine, diglycolamine, 1-aminopropan-2-ol, 2-dimethylaminoethanol, 2-(butylamino)ethanol, 2-diethylaminoethanol, 2-(tert-butylamino)ethanol, N-(tert-butyl)diethanolamine, triethanolamine, 2-ethylaminoethanol, 2-aminoheptan, triisopropylamine, N-(2-hydroxyethyl)morpholin, N-methylmorpholine, N-butyl diethanolamin or 2-(dibutylamino)ethanol, or any mixture thereof.

~~15.14.~~ The liquid herbicidal composition according to claim ~~14.13~~, wherein

the cation M^+ is a protonated amine, wherein the amine is selected from ethanolamine, diethanolamine, diglycolamine, 1-aminopropan-2-ol, 2-dimethylaminoethanol or triethanolamine, or any mixture thereof.

~~16.15.~~ The liquid herbicidal composition according to any one of claims 1 to ~~14.10~~, wherein the cation M^+ is sodium.

~~17.16.~~ The liquid herbicidal composition according to any one of the preceding claims, wherein composition comprises

- A) 13 to 36 weight % the herbicidal compound selected from glufosinate, a salt thereof, preferably the ammonium salt, and/or its respective (L-)isomers;
- B.1) 2 to 10 weight % of ethanol;
- B.2) 2 to 15 weight % of 1,2-propylene glycol;
- C) 8 to 36 weight % water;
- and
- D) 15 to 70 weight % of a compound of formula (I).

~~18.17.~~ The liquid herbicidal composition according to claim ~~17.16~~, wherein composition further comprises

- E) up to 20 weight % of other ingredients selected from further solvents, pigments, anti-foaming agents, anionic, nonionic, cationic or zwitterionic surfactants as thickeners.

~~19.18.~~ Method for producing an aqueous liquid herbicidal composition as claimed in claims 1 to 17 comprising the steps of

- (a) providing a solvent B.1 as defined in claim 1,
- (b) providing a solvent B.2 as defined in claim 1,
- (c) combining the two solvent components B.1 and B.2 to a mixture,
- (d) combining the obtained mixture of the solvent components with water, the herbicidal compound A, dipropylene glycol and the compound of the formula (I) such that a composition as defined in any one of claims 1 to ~~46~~17 is obtained.

~~20~~19. Method for controlling undesired plant growth and/or controlling harmful plants, comprising the step of applying the liquid herbicidal composition as defined in any of claims 1 to ~~48~~17 onto the undesired plants or the harmful plants, on parts of the undesired plants or the harmful plants, or on the area where the undesired plants or the harmful plants grow.

~~21~~20. Use of the liquid herbicidal composition as defined in any of claims 1 to ~~48~~17 in the field of agriculture.