

Annex to EPO Form 2004, Communication pursuant to Rule 71(3) EPC

Bibliographical data of European patent application No. 14 189 557.3

For the intended grant of the European patent, the bibliographical data are set out below, for information:

Title of invention:

- Limonen: Formulierung und Verwendung als Insektizide
- Limonene: formulation and insecticide use
- Limonène : formulation et utilisation d'insecticide

Classification: INV. A01N27/00 A01P7/02 A01P7/04

Date of filing: 20.10.2014

Priority claimed:

Contracting States*
for which fees have
been paid:

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU
LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Extension States*
for which fees have
been paid:

Validation States*
for which fees have
been paid:

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*) If the time limit for the payment of designation fees according to Rule 39(1) EPC has not yet expired and the applicant has not withdrawn any designation, **all Contracting States/Extension States/Validation States** are currently still deemed to be designated. See also Rule 71a(3) EPC and, if applicable, the above Note to users of the automatic debiting procedure.

**) If two or more applicants have designated different Contracting States, this is indicated here.



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Application No. 14 189 557.3 - 1454	Ref. 404403EP/SXO	Date 15.11.2017
Applicant Arysta LifeScience Benelux Sprl		

Communication under Rule 71(3) EPC

1. Intention to grant

You are informed that the examining division intends to grant a European patent on the basis of the above application, with the text and drawings and the related bibliographic data as indicated below.

A copy of the relevant documents is enclosed.

1.1 In the text for the Contracting States:

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT
RO RS SE SI SK SM TR

Description, Pages

1, 5-9, 11, 13, 14, as originally filed
17-31

2, 2a filed in electronic form on 26-10-2016

4, 10, 12, 16 filed in electronic form on 05-07-2017

3, 15 filed in electronic form on 08-09-2017

Claims, Numbers

1-16 filed in electronic form on 08-09-2017

With the following amendments to the above-mentioned documents proposed by the division

Description, Pages 2a, 6-10, 12, 14, 15

Claims, Numbers 16

Comments

Description adapted to amended claims (Art. 84 EPC). The wording of claim 16 has been adapted to the wording of claims 1-11 (Art. 84 EPC, clarity).

1.2 Bibliographic data

The title of the invention in the three official languages of the European Patent Office, the international patent classification, the designated contracting states, the registered name(s) of the applicant(s) and the other bibliographic data are shown on **EPO Form 2056** (enclosed).

2. Invitation

You are invited, **within a non-extendable period of four months** of notification of this communication,

2.1 to EITHER approve the text communicated above and verify the bibliographic data (Rule 71(5) EPC)

- (1) by filing a translation of the claim(s) in the other two official languages of the EPO

Fee code	EUR
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- (2a) by paying the fee for grant including the fee for publication:
minus any amount already paid (Rule 71a(5) EPC):

007	925.00 0.00
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Total amount:	925.00
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- (3) by paying additional claims fees under Rule 71(4) EPC;
number of claims fees payable: 1
minus any amount already paid (Rule 71a(5) EPC):

016	235.00 0.00
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Total amount:	235.00
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Important: If the translations of the claims and fees have already been filed and paid respectively in reply to a previous communication under Rule 71(3) EPC, e.g. in the case of resumption of examination after approval (see Guidelines C-V, 6), **agreement as to the text to be granted** (Rule 71a(1) EPC) must be expressed within the same time limit (e.g. by approving the text and verifying the bibliographic data, by confirming that grant proceedings can go ahead with the documents on file and/or by stating which translations of the claims already on file are to be used).

Note 1: See "Notes concerning fee payments" below.

Note 2: Any overpaid "minus" amounts will be refunded when the decision to grant (EPO Form 2006A) has been issued.

Note 3: For the calculation of the grant fee under Article 2(2), No. 7, RFees (old fee structure), the number of pages is determined on the basis of a clean copy of the application documents, in which text deleted as a result of any amendments by the examining division is not shown. Such clean copy is made available via on-line file inspection only.

2.2 OR, in the case of disapproval, to request reasoned amendments or corrections to the text communicated above or keep to the latest text submitted by you (Rule 71(6) EPC).

In this case the translations of the claims and fee payments mentioned under point 2.1 above are NOT due.

The terms "amendment(s)" and "correction(s)" refer only to amendments or corrections of the application documents and not of other documents (e.g. bibliographic data, the designation of the inventor, etc.).

If filing amendments, you must identify them and indicate the basis for them in the application as filed. Failure to meet either requirement may lead to a communication from the examining division requesting that you correct this deficiency (Rule 137(4) EPC).

2.3 Bibliographic data

Where you request a change or correction of bibliographic data in response to the Rule 71(3) communication, this will **not** cause the sending of a further communication under Rule 71(3) EPC. You will still have to pay the fees and file translations in reply to the Rule 71(3) communication in the case of 2.1 above, unless you also file a reasoned request for amendments or corrections in response to the Rule 71(3) communication (see case 2.2 above).

3. Loss of rights

If neither of the two possible actions above (see points 2.1 or 2.2) is performed in due time, the European patent application will be deemed to be withdrawn (Rule 71(7) EPC).

4. Further procedure

4.1 In the case of point 2.1 above

- 4.1.1 The decision to grant the European patent will be issued, and the **mention of the grant** of the patent will be published in the European Patent Bulletin, if the requirements concerning the translation of the claims and the payment of all fees are fulfilled and there is agreement as to the text to be granted (Rule 71a(1) EPC).

Note on payment of the renewal fee:

If a renewal fee becomes due before the next possible date for publication of the mention of the grant of the European patent, publication will be effected only after the renewal fee and any additional fee have been paid (Rule 71a(4) EPC).

Under Article 86(2) EPC, the obligation to pay renewal fees to the European Patent Office terminates with the payment of the renewal fee due in respect of the year in which the mention of the grant of the European patent is published.

Note on payment of the designation fee(s):

If the designation fee(s) become(s) due after the communication under Rule 71(3) EPC, the mention of the grant of the European patent will not be published until these fees have been paid (Rule 71a(3) EPC).

- 4.1.2 After publication, the **European patent specification** can be downloaded free of charge from the EPO publication server <https://data.epo.org/publication-server>.

4.1.3 Filing of translations in the contracting states

As regards translation requirements prescribed by the contracting states under Article 65(1) EPC, please consult the website of the European Patent Office

www.epo.org → Law & practice → Legal texts, National law relating to the EPC

www.epo.org → Law & practice → All Legal texts → London Agreement

In the case of a valid extension or validation

As regards translation requirements prescribed by the extension or validation states, please consult the website of the European Patent Office

www.epo.org → Law & practice → Legal texts, National law relating to the EPC

Failure to supply a prescribed translation in a contracting state, or in an extension or validation state may result in the patent being deemed to be void *ab initio* in the state concerned (Art. 65(3) EPC).

4.2 In the case of 2.2 above

If the present communication under Rule 71(3) EPC is based on an auxiliary request and, within the time limit, you maintain the main request or a higher ranking request which is not allowable, the application will be refused (Art. 97(2) EPC).

If the examining division gives its consent to the requested amendments or corrections, it will issue a new communication under Rule 71(3) EPC; otherwise, it shall resume the examination proceedings (Rule 71(6) EPC).

5. Filing of a divisional application

Any divisional application relating to this European patent application must be filed directly with the European Patent Office in Munich, The Hague or Berlin and will be in the language of the proceedings for the present application, or if the latter was not in an official language of the EPO, the divisional application may be filed in the language of the present application as filed (see Article 76(1) and Rule 36(2) EPC). Any such divisional application must be filed while the present application is still pending (Rule 36(1) EPC; Guidelines A-IV, 1.1.1).

6. Notes concerning fee payments

6.1 Making payments

For payments made via deposit account, please note that as from 1 December 2017 debit orders will only be carried out if filed in an electronically processable format (xml), using an accepted means of filing as laid down in the Arrangements for deposit accounts (ADA), published in the Supplementary publication in the Official Journal.

All relevant information related to the modes of payment of fees to the EPO can be retrieved from the EPO website at "**Making Payments**".

6.2 Information concerning fee amounts

Procedural fees are usually adjusted every two years, on even years, with effect from 1 April. Therefore, before making a payment, parties should verify the amounts actually due on the date of payment using the applicable version of the Schedule of fees and expenses, published as a Supplement to the Official Journal of the EPO, available on the EPO website (www.epo.org) at www.epo.org/schedule-of-fees. The "Schedule of fees" table allows the viewing, downloading and searching of individual fee amounts, both current and previous.

6.3 Note to users of the automatic debiting procedure

The fee for grant, including the fee for publication, and any additional claims fees due under Rule 71(4) EPC will be debited automatically on the date of filing of the translations of the claims, or on the last day of the period of this communication. However, if the designation fee(s) become(s) due as set out in Rule 71a(3) EPC and/or a renewal fee becomes due as set out in Rule 71a(4) EPC, these should be paid separately by another permitted way of payment in order not to delay the publication of the mention of the grant. The same applies in these circumstances to the payment of extension and validation fees. The same applies in these circumstances to the payment of extension and validation fees.

Note: If a waiver is expressed in response to a Rule 71(3) communication (see OJ EPO 2015, A52), the fee for grant, including the fee for publication/printing, and any additional claims fees will not be debited automatically. These fees must be paid separately by another means of payment allowed under the Rules relating to Fees.

Examining Division:

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Enclosures: Text intended for grant

EPO Form 2056

Application No.:

14 189 557.3

IV.2. Patent classification

The classification has been changed. It now is as follows:

INV. A01N27/00 A01P7/02 A01P7/04

IV.3. Title of the invention

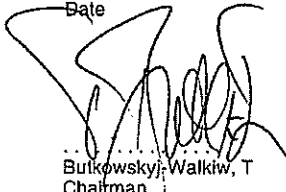
The title indicated on the published patent application remains unchanged. It reads as follows:

Limonen: Formulierung und Verwendung als Insektizide

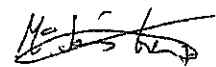
Limonene: formulation and insecticide use

Limonène : formulation et utilisation d'insecticide

IV.4. Documentation

3.11.17
Date

Butkowsky, Walkiw, T
Chairman

Enclosure(s):


Lorenzo Varela, M
1st examiner


Marie, Gerald
2nd examiner

Limonene: formulation and insecticide use**TECHNICAL FIELD**

5 The invention pertains to the technical field of agrochemicals derived from a natural source. More in particular it pertains to the use of limonene. A way of formulating highly concentrated limonene is provided which is storage stable, even in the cold. It can be used as an insecticide or acaricide, particularly against mites or scales.

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BACKGROUND

To be economically viable it is of interest to have concentrated emulsifiable compositions, with a high load of pesticidal active ingredient. EC formulations
15 typically comprise a pesticidal active ingredient, emulsifying surfactant and solvent.

The problem associated with high amounts of active ingredient is that these compositions are sensitive to form deposits of active ingredient when stored cold.

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Polymeric surfactants have become popular for the formulation of emulsifiable concentrates. Their use in highly loaded EC formulations is limited as they are particularly sensitive to cold and form deposits.

25 Formation of deposits can lead to loss of active ingredient in a spray tank and blockage of spray equipment, e.g. spray nozzles.

Consequently, there is a demand for improved emulsifiable formulations.

30 In addition, there is much interest in the replacement of synthetic pesticidal active ingredients by ingredients sourced from nature.

Consequently, there is a demand for emulsifiable formulations containing nature derived active ingredients as active substances; preferably as the only active
35 ingredient present in a formulation.

A candidate active ingredient for use in emulsifiable compositions for use as pesticide is limonene. Limonene is obtainable out of an extract of citrus fruit peels. It is present in high concentrations in citrus oil, lemon oil, orange oil, lime oil, grapefruit oil and tangerine oil. Especially orange oil has a high content of limonene, typically at least 90%.

Limonene however is prone to oxidation when exposed to air or to oxygen. Oxidation of limonene lowers its effectiveness as pesticide, shortens the shelf life and creates undesired side products.

EP 1657 979 describes a ready to use insecticide comprising as active ingredients at least 0.01% insecticide, at least 0.1% limonene, a surfactant, at least 20% water and a hydrocarbon solvent. The insecticide is a synthetic pyrethroid, natural pyrethrum, or organophosphate. The potential of using limonene as single active ingredient has not been realised. In addition it is desired to replace hydrocarbon solvents in agrochemical formulations, as their presence leads to an undesired product classification. For instance, the aromatic hydrocarbon solvent, known as Solvesso 200, is a suspected carcinogen as indicated by a H351 hazard statement. Other grades of this important family of solvent are classified as aspiration hazard, Category 1 (may be fatal if swallowed and enters airways).

EP 2 200 429 describes a composition comprising a high terpene based oil, a stabiliser, a chelating agent, a preservative and one or more organic solvents in addition to the active ingredient. The presence of a stabiliser points to stability issues. Again, use of organic solvents in agrochemical formulations, especially those that are going to be positioned as environmentally unfriendly, is undesired.

WO2011024135 describes a hydrophobic composition for the control of some insect species and some spider mites (acarides). The composition contains polymer comprising polystyrene. The polymer is dispersed by an agent in a sufficient amount to fully disperse the polymer. A surfactant included is a typically an agriculturally acceptable surfactant.

CA2198327 describes a blend mixture of organic composition for topical application to carpet, rug and upholstery serves as a disinfectant, germicide, fungicide, insecticide, deodorant, degreaser, while maintaining cleaning ability in a one-step application. The liquid composition is topically applied to carpet, rug or upholstery by means of a dry fine wiping cloth or a sponge. The composition comprises a) 1-5% by weight mineral oil, b) 10-60% by weight D'limonene, c) 5-20% by weight pine oil, d) 10-40% by weight mixed surfactants and e) 1-10% by weight co-

2a

solvent.

CA2187552 describes a blend mixture of organic composition for topical application to wood, ceramic, metal, kitchen ventilator or other hard surface articles serves as a disinfectant, germicide, fungicide, insecticide, deodorant, degreaser, lubricant while maintaining gloss and protection against oxidation and sunlight damage in a one-step application. The liquid composition is topically applied to wood or other articles by means of a dry fine wiping cloth, a dry napkin or a dry sponge. The composition comprises a) 5-20% by weight mineral oil, b) 30-70% by weight D'limonene, c) 5-20% by weight pine oil, d) 0-5% by weight mixed surfactants, and e) 1-10% by weight co-solvent.

US2009099135 describes compositions for controlling a target pest including a pest control product and at least one active agent, wherein: the active agent can be capable of interacting with a receptor in the target pest; the pest control product can have a first activity against the target pest when applied without the active agent and the compositions can have a second activity against the target pest; and the second activity can be greater than the first activity.

US2005169953 describes aerosol insecticidal sprays that contain butylhydroxytoluene, limonene, and sodium benzoate, in addition to water, hydrocarbon solvent, propellant, surfactant, and insecticidal active. The sprays are resistant to discoloration even during long term storage.

DE19720604 describes citrus terpene-containing composition containing 40 - 60 wt. % citrus terpene, 15 - 30 wt. % water-soluble solvent, 10 - 20 wt. % surfactant and 1 - 5 wt. % quaternary ammonium compound, with water making up the remainder.

US2008146444 describes a method for improving plant growth by adding at least one terpene and one or both of an organic solvent and a surfactant to the growth medium of the plant, and to a composition that is useful for improving plant growth comprising at least one terpene, an organic solvent, and optionally a surfactant.

The invention thereto aims to provide a composition comprising limonene suitable to be used as an insecticide, which overcomes at least one of the problems mentioned above.

SUMMARY OF THE INVENTION

In a first aspect, the invention provides 2 a composition, able to form an emulsion when added to water, comprising more than 50 wt% limonene and an emulsifying surfactant, characterised in that the composition comprises less than 10 wt % water, the emulsifying surfactant has a hydrophilic-lipophilic balance (HLB) between 7 and 12, and the composition further comprises an anionic wetting agent. 2

~~a water emulsifiable composition, comprising~~

~~30 more than 50 wt% limonene and an emulsifying surfactant, characterised in that the composition is essentially free of solvents.~~

This highly concentrated composition has the advantage that the use of oxygen-comprising water can be reduced and preferably even avoided. As the exposure of limonene to water is reduced until the composition is diluted with water, oxidation of limonene prior to its use is reduced. As the composition is also essentially free of an organic solvent, the composition may not attract negative labelling requirements (H351, H304) associated with the use of organic solvents, in particular aromatic solvents.

In a second aspect, the invention provides a use of a composition according to an embodiment of the invention for treating a plant or a part of a plant as an acaricide or insecticide, particularly against Acari (mites), *Coccoide* (scales) or Aleyrodidae (white flies).

In the past treatment of these pests was not effective with the available products. With the availability of highly formulated and storage stable products, higher amounts of limone can be dosed and have effect.

In a third aspect, the invention provides a method of making a composition according to an embodiment of the invention and packing said composition. The method comprises of the following steps:

- mixing the components of the composition in the absence of oxygen;
- adding the composition to containers, flushing the headspace of said filled containers with an inert gas.

This preparation method has the advantage that exposure to oxygen is substantially reduced and can even be avoided. In the mixing of the ingredients and during the filling of the containers, contact with oxygen is reduced; this is reducing the possibility of limonene oxidizing to less effective and potentially harmful products.

In a fourth aspect, the invention provides a method for treating a plant or a part of a plant, wherein the method is for providing insecticidal activity for curative treatment of insects, preferably insects belonging to the group of *Acari* or mites, *Coccoidea* or scales and *Aleyrodidae* or white flies, comprising the following steps:

- emulsifying a limonene comprising substance according to an embodiment of the invention in water to obtain an emulsion;
- applying said emulsion to said insects at an effective dose.

The availability of a highly concentrated, emulsifiable and storage stable formulation allows the preparation of a broad range of application liquids, such as spray liquids. The concentration of limonene in a spray liquid can easily be modified according to the insect pest to be treated.

In a preferred embodiment the effective dose at which the emulsion is applied to insects is between 60 g limonene per hectare and 2500 g limonene per hectare, preferably between 120 g limonene per hectare and 2000 g limonene per hectare, more preferably between 150 g
5 limonene per hectare and 1800 g limonene per hectare, even more preferably between 250 g limonene per hectare and 1200 g limonene per hectare and most preferably between 500 g limonene per hectare and 1000 g limonene per hectare, for example 750 g limonene per hectare. In a further preferred embodiment the insects to be treated are preferably mite, whitefly, aphid, leaf hopper, lygus bug, mealy bug, beet armyworm, thrips, cabbage looper, diamondback moth,
10 cabbageworm or armyworm.

In a preferred embodiment the effective dose at which the emulsion is applied to insects belonging to the group of *Acar*i or mites, *Cocco*idea or scales and *Aleyro*didae or white flies is between 750 g limonene per hectare and 2500 g limonene per hectare, preferably between 900
15 g limonene per hectare and 2000 g limonene per hectare, more preferably between 1000 g limonene per hectare and 1800 g limonene per hectare, even more preferably between 1100 g limonene per hectare and 1500 g limonene per hectare and most preferably between 1200 g limonene per hectare and 1400 g limonene per hectare, for example 1300 g limonene per hectare.

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DETAILED DESCRIPTION OF THE INVENTION

"About" as used herein referring to a measurable value such as a parameter, an amount, a temporal duration, is meant to encompass variations of 35 +/-20% or less, preferably +/-10% or less, more
25 preferably +/-5% or less, even more preferably +/-1% or less, and still more preferably +/-0.1% or less of and from the specified value, in so far such variations are appropriate to perform in the disclosed invention. However, it is to be understood that the value to which the modifier "about" refers is itself also specifically disclosed.

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The recitation of numerical ranges by endpoints includes all numbers and fractions subsumed within that range, as well as the recited endpoints.

5 The expression "% by weight" or "wt%" (weight percent), here and throughout the description unless otherwise defined, refers to the relative weight of the respective component based on the overall weight of the formulation.

10 As used herein, the terms "pesticidal effect" and "pesticidal activity" mean any direct or indirect action on the target pest that results in reduced feeding damage on any part of the plant, including but not limited to the seeds, roots, shoots and foliage of plants as compared to untreated plants.

15 The terms "active against a (first or second) pest", also have the same meaning. Such direct or indirect effects include inducing death of the pest, repelling the pest from any part of the plant, including but not limited to seeds, roots, shoots and/or foliage, inhibiting feeding of the pest on, or the laying of its eggs on, the plant seeds, roots, shoots and/or foliage, and inhibiting or preventing reproduction of the pest.

20 "Plant pest" means any organism known to associate with plants and which, as a result of that association, causes a detrimental effect on the plant's health and vigor. Plant pests include but are not limited to fungi, bacteria, viruses, molds, insects, mites and nematodes or any other organism that causes a detrimental effect on the plant's health or vigor, excluding mammals, fish and birds.

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The term "plant" as used herein encompasses whole plants and parts of plants such as roots, shoots, stems, leaves, seedlings, germinated seeds and seed, as well as cells and tissues within the plants or plant parts. The term plant includes transgenic and non-transgenic plants.

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The term "insecticidal activity" has the same meaning as pesticidal activity, except it is limited to those instances where the pest is an insect.

35 As used herein, the "shoots and foliage" of a plant are to be understood to be the shoots, stems, branches, leaves and other appendages of the stems and branches of the plant after the seed has sprouted, including the roots of the plant. It is

preferable that the shoots and foliage of a plant be understood to be those parts of the plant that have grown from the seed and/or shoots of a "mother" plant.

In a first aspect, the invention provides emulsifiable compositions comprising 1-methyl-4-(1-methylethenyl)-cyclohexene as active ingredient, commonly known as 2 β limonene, in an amount of more than 50 wt% limonene and an emulsifying surfactant, characterised in that the composition comprises less than 10 wt% water, the emulsifying surfactant has a hydrophilic-lipophilic balance (HLB) between 7 and 12, and the composition further comprises an anionic wetting agent. $\downarrow$ 2

~~2 limonene. In particular, 2 β the composition comprises $\downarrow$ 2 the invention provides a water emulsifiable composition, comprising more than 50 wt%, 55 wt%, 56 wt%, 57, wt%, 58 wt%, 59 wt% or more than 60 wt% 2 β limonene. $\downarrow$ 2 limonene and an emulsifying surfactant or surfactant system, comprising one or more surfactants, characterised in that the~~
10 ~~composition is essentially free of solvents.~~ In a preferred embodiment, the composition comprises more than 65%, preferably more than 70%, and most preferably more than 71 wt% of limonene relative to the total weight of the composition. A most preferred composition typically has a limonene content of 71-72 wt% relative to the total weight of the composition.

15 In a preferred embodiment, limonene is present in the composition as the enantiomeric pure form of D-limonene, CAS: 5989-27-5. In another embodiment, limonene is present in the composition as the enantiomeric pure form of L-limonene, CAS: 5989-54-8. In yet another embodiment limonene is present as a racemic mixture, also known as dipentene, CAS: 138-86-3. Most preferably, a
20 composition according to the invention comprises more than 60 wt% D-limonene, preferably at least 65 wt% D-limonene, most preferably at least 70 wt% D-limonene.

25 Limonene can be obtained via a synthetic route, or limonene can be extracted from a natural source. As the synthetic route is too costly in view of the material available from natural sources, most commercially available limonene is from a natural source. D-Limonene can be obtained commercially from citrus fruits through two primary methods: centrifugal separation or steam distillation.

30 With the word "citrus fruit" is meant a fruit of the genus Citrus, preferably selected from the list of citrus, mandarine, orange, kumquat, lemon, lime, grapefruit, pomelo, citrange, citron.

35 In a preferred embodiment, limonene is obtained out of an extract of citrus fruit peels. In further embodiments said citrus fruit oil is selected from the group consisting of orange oil, lemon oil, lime oil, grapefruit oil and tangerine oil. In a

preferred embodiment, said citrus fruit oil is orange oil. In a more preferred embodiment said orange oil is selected from the list of technical grade orange oil, CAS 94266-47-4; food grade orange oil, CAS 8028-48-6 or cold pressed orange oil.

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In a preferred embodiment, the citrus fruit oil, preferably orange oil is directly used in the composition without the need to purify the limonene out of the oil. In a preferred embodiment, orange oil is the only active ingredient present in the composition.

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In an alternative embodiment, other terpenes or terpenoids are present in the composition, preferably carvone, carveol, limonene oxide, p-cymene, α -pinene, β -pinene, myrcene, β -ionone, linalool, geraniol or eugenol. In another alternative embodiment, oils extracted from plants, preferably mint, peppermint, spearmint, clove or rosemary are used in the composition.

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~~A composition according to the invention is essentially free of solvent, in particular free of water and organic solvent, in particular aromatic solvent. By the term "substantially solvent free" as used in the present invention, is meant a composition with less than 10 wt% solvent based on the total weight of the composition.~~

~~In a preferred embodiment the composition comprises less 10 wt% solvent, preferably less than 5 wt% solvent, and most preferably solvent free, although traces, less than 0.1%, of solvent can't be excluded, all percentages are weight by weight. In a preferred embodiment the composition comprises less than 10wt% water, preferably less than 8 wt% water, most preferably less than 5 wt% water and most preferably water-free, although traces, less than 0.1 wt%, of water can't be excluded, all percentages are weight by weight.~~

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Large amounts of oxygen can be solubilized in water. For instance, water at a temperature of around 20 °C contains about 9 mg/l oxygen. When water is part of the composition, oxygen can oxidize the limonene to other compounds, which can be less active or even inactive or harmful. Terpene oxides are known to cause skin sensitization. The low water content and consequently the small amount of oxygen dissolved in water can reduce this oxidation process. It can prevent the formation of other compounds. It can prolong the shelve life of the composition. An

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additional benefit of having a composition with little or no water-content is that for the shipment and storage less weight and volume need to be taken into account, which reduces the cost associated with logistics.

- 5 Orange oil is poorly soluble in water. For orange oil or limonene to be able to form a stable emulsion when added to water a surfactant is needed. The surfactant forms micelles, with a hydrophobic core and a hydrophilic outer shell. The limonene will occupy the space in the hydrophobic cores of these micelles. The substantial absence of water and organic solvent such as naphtha solvent, i.e. less
10 than 10wt%, in a composition of the present invention excludes a whole range of surfactants commonly used in the prior art for solvent based systems as these surfactants will not be soluble in limonene. In a preferred embodiment, the surfactant is soluble in the composition with less than 10 wt% water, even at temperatures from -5°C to 54°C for a minimum period of 14 days. Solubility can
15 be measured by mixing the limonene, possibly as orange oil, and the surfactant. If upon standing for 14 days, phase separation follows, it can be concluded that the surfactant is not soluble in the limonene or orange oil.

- 2 The surfactant used in the claimed composition has a hydrophilic-lipophilic balance
20 (HLB) value between 7 and 12, preferably 10.5. A HLB in this region is a compromise between the solubility of the surfactant in limonene and the ability to stabilize an emulsion of limonene when added to water, which can be considered as an oil in water-type system. A person skilled in the art would pick a surfactant with a HLB-value between 12 and 16 to obtain an emulsion.

- 25 In a preferred embodiment said emulsifying surfactant is a non-ionic surfactant. Nonionic surfactants include agents such as sorbitan monolaurate, sorbitan monopalmitate, sorbitan sesquioleate, sorbitan trioleate, polyoxyethylene sorbitan monolaurate, polyoxyethylene sorbitan monostearate, polyethylene glycol monooleate, polyethylene glycol alkylate, polyoxyethylene alkyl ether, polyglycol diether, lauroyl diethanol amide, fatty acid iso-propanolamide, maltitol hydroxy fatty acid ether, alkylated polysaccharide, alkyl glucoside, sugar ester, oleophilic glycerol monostearate, self-emulsifiable glycerol monostearate, polyglycerol monostearate, polyglycerol alkylate, sorbitan monooleate, polyethylene glycol
30 monostearate, polyoxyethylene sorbitan monooleate, polyoxyethylene cetyl ether, polyoxyethylene sterol, polyoxyethylene lanolin, polyoxyethylene bees wax, and

combinations thereof. In a preferred embodiment, said nonionic surfactant is selected from the list provided above.

Preferably the non-ionic surfactant present in a composition according to the invention is a non-ionic polymeric surfactant. More preferable the polymeric surfactant is an alkoxylated alcohol, even more preferably a fatty alcohol alkoxylate, most preferably an ethoxylate and/or a propoxylate, preferably of a fatty alcohol, and most preferable an iso-tridecanol alkoxylate, even most preferably an iso-tridecanol penta-ethoxylate. The surfactant is preferably present in an amount of 5 to 40 %, more preferably in 10 to 20 %, most preferably 12-13 %, all weight by weight.

By the term "fatty alcohol" as used herein, is meant a linear or branched alcohol with a carbon chain length of at least 4 carbon atoms, preferably at least 6, more preferably at least 8, even more preferably at least 10, most preferably at least 12.

2 ¶ The ¶ 2

~~In a preferred embodiment, a~~ composition according to the invention comprising limonene, with the ability to form a stable emulsion when added to water, is used as an insecticide or acaricide. The composition is added to water and the limonene in combination with the surfactant form an emulsion, which can be applied to plants, crops or directly on the pest. The dilution with water is modified to provide a desired dose rate of active ingredient. The dose rate is selected according to the pest.

25

2 ¶ The ¶ 2

~~In a preferred embodiment, a~~ composition according to the invention comprises 2 ¶ an anionic ¶ 2

wetting agent, which helps to lower the surface tension of the emulsion formed after adding the composition to water. This lowered surface tension helps to coat a larger surface of the leaves of the crop with the composition and this results in that more insects get in touch with the insecticide. The need for 2 ¶ an anionic ¶ 2 wetting agent is

even bigger when the leaves of the crop are having a wax-like surface, for example leaves of citrus, or when the leaves are having hydrophobic glandular hairs on their surface to repel water droplets, for example tomato leaves.

35 Here again, the low water content composition does not allow wetting agents that are commonly used in the prior art. The wetting agent is commonly a water soluble anionic surfactant. These surfactants require water to form a stable

solution, as their counter ion is commonly a calcium ion, an ammonium ion, a sodium ion or a potassium ion.

Anionic surfactants include agents such as sodium stearate, potassium palmitate, sodium cetyl sulfate, sodium lauryl phosphate, sodium polyoxyethylene lauryl sulfate, triethanolamine palmitate, polyoxyethylene sodium lauryl phosphate, and sodium N-acyl glutamate.

The wetting agent in a composition according to the invention, is an anionic surfactant with the anionic part preferably being an alkylbenzene sulfonate, more preferably a dodecylbenzene sulfonate. The cationic counter ion is preferably chosen out of the list of triethylammonium ion, triethanolammonium ion, tetrabutylammonium ion, or other tetra-alkylammonium ions, tetraphenylphosphonium ion or other tetra-alkylphosphonium ions or a combination of a metal-ion and a crown ether.

In a preferred embodiment, the wetting agent preferably is an ethanolamine alkylbenzenesulfonate. In a preferred embodiment the wetting agent is triethanolammonium dodecylbenzene sulfonate, CAS: 27323-41-7. A combination of this anion and counter ion allows the wetting agent to be soluble in the composition without solvent other than the limonene. An emulsifiable composition of limonene and this type of surfactant in the absence of solvent other than the active ingredient was found to have good cold storage stability. Preferably the cold storage stability is provided in a temperature range between -20 °C and 5 °C, preferably between -10 °C and 4 °C, more preferably between -5 °C and 3 °C, most preferably between -4°C and 0 °C. Cold storage stability was measured for compositions stored for a period of 1 day, 7 days or 14 days. The test was performed according to CIPAC method MT 39.1. Measurement methods are known to a person skilled in the art. Compositions according to the invention have improved cold storage stability.

The wetting agent is preferably present in the emulsifiable composition in an amount of 5 to 25 %, more preferably in 10 to 20 %, most preferably 15-16 %, expressed in weight percent by total weight of the composition.

In a preferred embodiment, the composition comprises an antioxidant. Preferably the antioxidant is chosen from the list diphenylamine, ethoxyquin, BHA which is a

mixture of 3-t-butyl-4-hydroxyanisole and 2-t-butyl-4-hydroxyanisole, BHT corresponding to 2,6-di-tert-butyl-p-cresol, ascorbic acid, the tocopherols and the polyphenols. The presence of an antioxidant may protect the limonene from oxidising. For instance, traces of oxygen can get into the composition or the headspace of the bottle after the bottle has been opened. This is advantageous as limonene oxides are suspected sensitizers.

The antioxidant is preferably present in less than 1%, more preferable less than 0.5%, most preferably less than 0.1 %, all weight by weight of the total composition.

In a preferred embodiment the antioxidant is BHT or BHA. The composition preferably comprises less than 1% BHT or BHA%, more preferable less than 0.5% BHT or BHA%, most preferably less than 0.1 % BHT or BHA%, all weight by weight of the total composition.

Other conventional inactive or inert ingredients can be incorporated into the limonene formulations. Such inert ingredients include but are not limited to: conventional sticking agents, dispersing agents such as methylcellulose, polyvinyl alcohol, lecithin, polymeric dispersants such as polyvinylpyrrolidone/vinyl acetate, emulsion stabilizers, surfactants, antifreeze compounds such as urea, dyes, colorants. By including suitable additives, for example additives for improving the distribution, adhesive power and resistance to rain on treated surfaces, the limonene compositions can be better adapted for various utilities.

Further inert ingredients useful in the present invention can be found in McCutcheon's, vol. 1, "Emulsifiers and Detergents," MC Publishing Company, Glen Rock, NJ. , U.S.A., 1996. Additional inert ingredients useful in the present invention can be found in McCutcheon's, vol. 2, "Functional Materials," MC Publishing Company, Glen Rock, N. J., U.S.A., 1996.

The use of organic solvents including aromatic solvents such as alkylbenzenes and alkylnaphthalenes, ketones such as cyclohexanone and methylcyclohexanone, chlorinated hydrocarbons such as chlorobenzene and trichlorethane, and alcohols such as benzyl alcohol, furfuryl alcohol, butanol and glycol ethers, can be avoided. Preferably these are absent.

The compositions disclosed are in the form of emulsifiable concentrates (EC). Emulsions may be prepared from it by dissolving the limonene emulsifiable composition in water. Further ingredients may be added or may be present in the water to which the emulsifiable concentrate is added, such as a wetting agent, emulsifying agent, or sticker.

Preferably the emulsifiable concentrate comprises at least 500 g/l limonene, preferably at least 550 g/l limonene, most preferably at least 600 g/l limonene, expressed as amount of active ingredient with 100% purity relative to the total volume of the composition.

In another aspect, the invention provides in a method of making a composition according to an embodiment of the invention and packing said composition. The method comprises of the following steps:

- mixing the components of the composition in absence of oxygen;
- adding the composition to containers, flushing the headspace of said composition containing containers with an inert gas.

The invention disclosed herein is also directed to methods of controlling pests on plants comprising application of the compositions disclosed herein to a plant to thereby control said pests.

The compositions disclosed herein can be applied in a number of ways. For example, they can be applied directly to the foliage of a plant, to seeds or to other media in which plants are growing or are to be planted, such as the furrow or in the immediate vicinity of the plant to the soil or where the seed is to be planted prior to sowing. Application methods include spraying, or applying as a vapor.

The compositions may be applied using methods including but not limited to spraying, wetting, dipping, misting, drenching, showering, fogging, soaking, dampening, drizzling, dousing, aerial crop dusting via airplane or helicopter and splashing.

Application can be to any part of the plant or seed including the foliage, stems, branches or roots, or to soil surrounding the roots, or to the seed before it is planted, or to the soil generally, to paddy water or to hydroponic culture systems. The limonene compositions disclosed herein may also be injected into plants or
5 sprayed onto vegetation using electrodynamic spraying techniques or other low volume methods.

The limonene compositions disclosed herein are preferably used for agricultural and horticultural purposes in the form of a water-diluted composition. The type of
10 composition used in any instance will depend upon the particular purpose envisaged.

It is contemplated that the present methods and compositions can be used to protect the seeds, roots and/or the above-ground parts of field, forage, plantation,
15 glasshouse, orchard or vineyard crops, grasses, turf, ornamentals, plantation, household or forest trees.

The plants that may be treated using the methods and compositions disclosed herein can be any species of plant. However, they are preferably the plant species
20 that are agronomically or horticulturally important.

In particular, the plant species can be corn, peanut, canola/rapeseed, soybean, cucurbits, crucifers, cotton, beets, rice, sorghum, sugar beet, wheat, barley, rye, sunflower, tomato, sugarcane, tobacco, oats, as well as other vegetable and leaf
25 crops. In certain embodiments, the crops or plant species may include vineyards, citrus, pecans, almonds, all stone fruits, apples, pears, bananas, lawns, turf, home & garden and garden varieties of plants. The crop concerned is preferable citrus fruit, preferably citrus, or tomatoes.

30 The plants may also be any ornamental plants, including but not limited to rose, tulip, violet, daffodil, gladiolus, lavender, lilies, narcissus, orchid, hyacinth, chrysanthemum, crocus, iris, peonies, zephyranthes, carnation, anthurium, gloxinia, azalea, poinsettia, ageratum, bamboo, begonia, camellia, dahlia, dianthus, geranium, impatiens, lilies of the valley and lobelia.

35

The target pest for the present invention include but are not limited to adult or larvae of any insect or other pest that feeds on the seed, roots and/or shoots and

foliage of the plant that is to be protected by the subject methods and compositions.

2 ¶ The method for treating a plant or a part of a plant with the claimed composition provides insecticidal activity, preferably against insects ¶ 2

~~In a preferred embodiment, the invention provides in a method for curative~~
5 ~~treatment of insects, preferably insects belonging to the group of *Acari* or mites,~~
Coccoidea or scales and *Aleyrodidae* or white flies, more preferably on crops
preferable on citrus and tomatoes.

2 ¶ The method for treating a plant or a part of a plant with the claimed composition provides insecticidal activity against ¶ 2

~~In a preferred embodiment, a composition according to an embodiment of the~~
10 ~~invention is used in the treatment of mites (*Tetranychus urticae*, *Panonychus citri*~~
or Eutetranychus banksi), preferably mites on citrus fruit, including Broad mite
(*Polyphagotarsonemus latus*).

2 ¶ The mites treated are preferably ¶ 2

~~In a more preferred embodiment, a composition according to an embodiment of~~
15 ~~the invention is used in the treatment of mites, also known as *Tetranychus*~~
urticae, preferably *T. urticae* on citrus fruit.

2 ¶ The method for treating a plant or a part of a plant with the claimed composition provides insecticidal activity against ¶ 2

~~In another more preferred embodiment, a composition according to an~~
20 ~~embodiment of the invention is used in the treatment of scales, preferably~~
California red scale, also known as *Aonidiella aurantii*.

2 ¶ The mites treated in a preferred embodiment are ¶ 2

~~In yet another more preferred embodiment, a composition according to an~~
~~embodiment of the invention is used in the treatment of mites, in particular citrus~~
25 ~~red mites, also known as *Panonychus citri*, or citrus brown mites, also known as~~
Eutetranychus africanus.

In a preferred embodiment, said composition is used at 5-3000 ml product/100 l
application liquid wherein the product preferably is a 600 g/l limonene EC
formulation or 630 g/l orange oil EC formulation (95% limonene). Preferably, said
30 composition is used at 100-2000 ml product/100 l, more preferably 150 ml-1000
ml product/100 l, most preferably around 500 ml product per 100 litre application
liquid. These ranges correspond to 6 to 1800 g/ha limonene. Preferably on hectare
is sprayed with 100 l to 2000 l spray water.

- 35 2 ¶ The method for treating a plant or a part of a plant, wherein the method is for providing insecticidal activity against Acari or mites, Coccoidea or scales and Aleyrodidae or white flies, comprises the following steps:- emulsifying a limonene comprising composition according to the invention in water thereby obtaining an emulsion;- applying said emulsion to said insects at an effective dose. ¶ 2

~~The inventors found that scales, mites or whitefly can be treated with 0.06-12 gram/l limonene applied directly on the insects.~~

Preferably said effective dose corresponds to an application of 60 to 1800 g limonene per hectare.

The methods of application may be selected from the group consisting of spraying, wetting, dipping, misting, drenching, showering, fogging, soaking, dampening, drizzling, dousing and splashing. Preferably the method of application is spraying.

In a preferred embodiment, the invention is directed to a method of applying an acaricidal/insecticidal composition to a target plant comprising, diluting the limonene emulsifiable compositions described herein into an aqueous composition, wherein said limonene-containing composition is diluted at a rate of about 1 part limonene-containing composition to about 40-400 parts said aqueous composition; preferably water. In certain preferred embodiments, said limonene-containing composition is diluted at a rate of about 1 part limonene-containing composition to about 200 parts aqueous composition; preferably water.

In a further aspect, the invention provides in a use of a composition according to an embodiment of the invention for treating a plant or a part of a plant as insecticide or acaricide, particularly as insecticide or acaricide against Acari (mites), Coccoide (scales) or Aleyrodidae (white flies).

A composition according to the invention is preferably used for treating a plant or a part of a plant as curative insecticide or acaricide. Said composition is preferably brought to a desired rate and is then brought in direct contact with the target insect or acarida pest. In a preferred embodiment the composition is used as an acaricide or insecticide in the treatment of Acarior mites, Coccoideaor scales andAleyrodidaeor white flies.

In another embodiment, the composition is used for treating a plant or a part of a plant as an insecticide, preferably in treatment of ants, mites, roaches, spiders, flies, wasps, hornets, bees, earwigs, mosquitoes, moths, and other flying insects.

Preferably the emulsified composition is applied at a concentration of 0.06-12 gram limonene per liter emulsion directly on the insects. The use of the composition is preferably curative.

5 Limonene is a volatile component. Even in the form of a (diluted) composition of the invention it can evaporate within 24 hours after application. This is advantageous as it leaves no residue on the treated plants or crops. This is of particular importance in biological agriculture, where use of synthetic agrochemicals is avoided.

10 This allows the insecticide to be used until one day before harvesting the plant or crop, leaving a food safe product that can be sold or processed into a food product 24 hours after application as there is no limonene residue after this period. The pre-harvest interval is less than one day.

15 Treating a with insects infested crop according this method will result in a mortality of said insects higher than 50%, preferably higher than 70%, more preferably higher than 80%, most preferably higher than 90%. The mortality rate of the pest concerned can be measured with techniques known to the skilled person.

The present invention will be now described in more details, referring to examples.

20 **Example 1:** 600 EC orange oil composition, product code BCP425D

Ingredients	g/l	wt/wt%
Orange Oil	630	71.6
Butylated hydroxytoluene (BHT)	0.7	0.1
Fatty alcohol iso-C13 + 5 EO	112	12.7
Triethanolamine alkylbenzenesulfonate solution 50 wt%	137	15.6
No additional solvent		
<i>Total</i>	<i>879.7</i>	<i>100</i>

Example 2: Use of a 600 EC orange oil composition according to example 1 against California red scale (*Aenidiella aurantii*) in citrus, on orange trees (I10-CIDSS-01 Trial).

- 5 One small plot replicated trial was carried out to evaluate the efficacy and selectivity of two foliar applications carried out at 10-14 days interval of BCP425D (630 g/L orange oil; 600 g/l limonene) applied alone at 25, 50, 100 and 200 ml product/100 l for the control of California red scale (*Aonidiella aurantii*) in citrus. No problems were encountered during mixing or application of any of the product
10 formulations tested.

The design, analysis of results and reporting of this study were carried out in accordance with EPPO guidelines PP 1/152(3) and PP 1/181(3). The conduct of the fieldwork was commensurate with local 'Good Agricultural Practice' and in
15 accordance with EPPO guidelines PP 1/135(3) and PP 1/74(2). There were no significant deviations from the EPPO guidelines.

No phytotoxicity symptoms were observed in any plot at any of the assessment timings. A high population of scales (*Aonidiella aurantii*) was present with an even
20 distribution throughout the trial area.

The results are summarized in Table 2-5. From the table it can be observed that the results obtained were comparable with the standard DURSBAN 48 EC (480 g/L Chlorpyrifos), a synthetic active ingredient, applied alone at 200 ml product/100 l.
25 Assessments were made for product efficacy and crop safety approximately at pre-applications, at 20 days after T2 application timing, and when fruits had reached its typical size and colour.

Two foliar applications at 10-14 days interval of BCP425D achieved control of
30 California red scale. A dose response was observed between different tested treatments of BCP425D applied alone: BCP425D applied at 200 ml product/hl achieved control with an efficacy slightly better than standard DURSBAN 48 EC. BCP425D applied at 100 ml product/hl obtained similar total control to standard DURSBAN 48 EC. BCP425D applied at 50 ml product/hl showed efficacy, but lower
35 than standard DURSBAN 48 EC. BCP425D applied at 25 ml product/hl presented the lowest results. Details of assessment dates, crop growth stages and assessment types are presented in Table 2.

Table 2: Assessment details

Date	Timing	Crop growth stage	Crop /Target	Pest growth stage	Assessment type
19 Aug	0 DAT1	79 (100%)	<i>Aonidiella aurantii</i>	L1 (20%) L2 (50%) Young female (30%)	Nº of live scales on shoots per plot.
30 Aug	11 DAT1 0 DAT2	79 (100%)	Orange tree <i>Aonidiella aurantii</i>	L2 (30%) Young female (60%) Adult (10%)	Phytotoxicity Nº of live scales on shoots per plot. Nº of dead scales on shoots per plot.
20 Sep	21 DAT2	79 (100%)	Orange tree <i>Aonidiella aurantii</i>	Young female (40%) Adult (60%)	Phytotoxicity Nº of live scales on shoots per plot. Nº of dead scales on shoots per plot. Nº of live scales on fruit per plot. Nº of non-infested, commercial and non-commercial fruits per plot.
11 Oct	73 DAT2	85 (80%) 89 (20%)	Orange tree <i>Aonidiella aurantii</i>	Adult (100%)	Phytotoxicity Nº of live scales on fruit per plot. Nº of non-infested, commercial and non-commercial fruits per plot.

Growth stage under BBCH code

DAT = Days after treatment

Assessment data were analysed using a two-way analysis of variance (ANOVA).

- 5 The probability of no significant differences occurring between treatment means were calculated as the F probability value ($p(F)$).

Table 3: Means total number of living individuals on shoots per plot, and % control

Nr	Product	Timing	Product g·ml ⁻¹ ·hl ⁻¹ ·ha	0 DAT1	11 DAT1 0 DAT2	21 DAT2
1	Untreated	-	-	238,74 a	278,70 a (0,0%)	129,09 a (0,0%)
2	DURSBAN 48	T1-T2	200 ml/ha	248,40 a	85,45 cd (68,3%)	34,58 d (73,2%)
3	BCP425D	T1-T2	25 ml/ha	263,04 a	160,26 b (42,5%)	83,03 b (35,7%)
4	BCP425D	T1-T2	50 ml/ha	243,50 a	137,60 b (50,6%)	62,32 c (51,7%)
5	BCP425D	T1-T2	100 ml/ha	238,34 a	109,26 c (60,8%)	32,01 d (75,2%)
6	BCP425D	T1-T2	200 ml/ha	257,72 a	82,17 cd (70,5%)	28,51 d (77,9%)

Table 4: Means total number of living individuals on fruits per plot, and % control

5

Nr	Product	Timing	Product g·ml ⁻¹ ·hl ⁻¹ ·ha	21 DAT2	73 DAT2
1	Untreated	-	-	1956,48 a (0,0%)	4004,73 a (0,0%)
2	DURSBAN 48	T1-T2	200 ml/ha	371,69 d (81,0%)	1038,44 d (74,1%)
3	BCP425D	T1-T2	25 ml/ha	974,27 b (50,2%)	2546,28 b (36,4%)
4	BCP425D	T1-T2	50 ml/ha	674,48 c (65,5%)	1610,62 c (59,8%)
5	BCP425D	T1-T2	100 ml/ha	291,31 d (85,1%)	674,32 d (83,2%)
6	BCP425D	T1-T2	200 ml/ha	269,65 d (86,2%)	551,11 d (86,2%)

Table 5: Means total number of non-infested, commercial and non-commercial fruits per plot

Nr	Product	Timing	Product g-ml/hl-ha	21 DAT2 Non Infested	73 DAT2 Non Infested	21 DAT2 Commercial	73 DAT2 Commercial	21 DAT2 Non Commercial	73 DAT2 Non Commercial
1	Untreated	-	-	58,00 c (0,0%)	29,00 b (0,0%)	27,50 a (0,0%)	21,75 c (0,0%)	114,50 a (0,0%)	149,25 a (0,0%)
2	DURBAN 48	T1-T2	200 ml/hl	118,25 a (+103,9%)	87,25 a (+200,9%)	34,25 a (+24,5%)	43,25 b (+98,9%)	47,50 c (-58,5%)	69,50 d (-53,4%)
3	BCP425D	T1-T2	25 ml/hl	98,75 b (+70,3%)	45,00 b (+55,2%)	27,00 a (-1,8 %)	29,00 bc (+33,3%)	71,75 b (-37,3%)	126,00 b (-15,6%)
4	BCP425D	T1-T2	50 ml/hl	127,50 a (+119,8%)	75,50 a (+160,3%)	32,25 a (+17,3%)	35,50 bc (+63,2%)	40,25 c (-64,8%)	89,00 c (-40,4%)
5	BCP425D	T1-T2	100 ml/hl	135,25 a (+133,2%)	94,75 a (+226,7%)	28,25 a (+2,7%)	44,25 b (+103,4%)	36,50 c (-68,1%)	61,00 d (-59,1%)
6	BCP425D	T1-T2	200 ml/hl	131,75 a (+127,2%)	83,25 a (+187,1%)	33,25 a (+20,9%)	60,75 a (+179,3%)	35,00 c (-69,4%)	56,00 d (-62,5%)

From these trial conditions and taking into account the attack level shown by the target pest within trial area, we can conclude that: The pest level (*Aonidiella aurantii*) within the trial area could be considered as very high. Two foliar applications at 10-14 days interval of BCP425D (EC formulation 600 g/l orange oil; 95% limonene) achieved control of California red scale. At some dose rates tested, the product showed an even higher efficacy than reference product DURSBAN 48 EC. BCP425D applied at 200 ml product/hl achieved with an efficacy slightly better than standard DURSBAN 48 EC. BCP425D applied at 100 ml product/hl obtained similar total control to standard DURSBAN 48 EC. BCP425D applied at 50 ml product/hl showed efficacy lower than standard DURSBAN 48 EC. BCP425D applied at 25 ml product/hl presented the lowest results between different experimental rates.

- Example 3:** Use of 600 EC orange oil compositions against mites (*Tetranychus urticae*, *panonychus citri* or *Eutetranychus banksi*) in citrus (BI12-CIDSS-02-ES Trial).

The objective of the study was to determine the efficacy evaluation of three different Biological Control Agents against mites (*Tetranychus urticae*, *Panonychus citri* or *Eutetranychus banksi*) in citrus. The performance of the test item was compared with a standard insecticide used at the normal dosage rate. The test item was applied to the crop with the recommendations for use. Trial was carried out in citrus. The study was conducted in compliance with the principles of Good Experimental Practice (GEP) as defined by Regulation 1107/2009 of the European Union.

Evaluation

Tetranychus urticae of citrus were identified visually, with the assistance of insect identification keys. *Tetranychus urticae* attacks are uniquely related to *Tetranychus urticae* and therefore visual identification was considered sufficient to conclude that causal agent was *Tetranychus urticae*. The evaluations were performed randomly selecting at least 100 leaves randomly taken citrus trees per plot. The number of living nymphs and adults *Tetranychus urticae* were counted and compared with the untreated plot. Additionally, at every evaluation phytotoxicity symptoms of damage to the crop as chlorosis or deformation were assessed. Vigour (qualitative estimation of plant mass) and growth stage of the

crop were assessed visually in comparison with the untreated. Each treated plot was compared with an untreated plot and the percentage of phytotoxicity and vigour estimated.

5 Table 6: Information on test and reference item

Product	Formulation	Active Ingredient	Dosage Rate Ingredient(s)
BORNEO	11% w/v	Etoxazole	0.05% v/v
BCP425D	600 g/L	D-Limonene	0.05% v/v
BCP425D	600 g/L	D-Limonene	0.01% v/v
BCP425D	600 g/L	D-Limonene	0.02% v/v
BCP425D	817 g/L	Mineral oil	1% v/v
Stability in spray solution: Yes			

Calculation

Number of living *Tetranychus urticae* was best suited to assess citrus occurrence. For all treatments and assessment dates the homogeneity of variance was tested by Bartlett's test. In case this test indicated no homogeneity of variance data were transformed to obtain homogeneity of variance.

The treatment means of each assessment date were calculated and compared using Student-Newman-Keuls LSD test ($p=0.05$). The efficacy of the test substance was calculated. Values observed in the treated series were corrected with those of the control series according to the formula of Abbott (1925): $E = (C - T)/C \times 100$

Tetranychus urticae

C: Number of living *Tetranychus urticae* in the control group.
T: Number of living *Tetranychus urticae* in the treated group.

Results

The results are summarized in the tables presented below, wherein the number of living living nymphs and living adults of *Tetranychus* are tabulated.

5 Table 7: Number of living nymphs *Tetranychus urticae*. Efficacy (%) according to ABBOTT.

Date		10 September	17 September	24 September	10 October
Assessment Interval		0 DBA A	7 DAA A	0 DAA B	7 DAA B
BBCH Crop		79	81	81	81
T1	Untreated	43 a	42 a	38 a	37,5 a
T2	BORNEO 0,05% v/v	44,3 a	8 b (81%)	10 b (73.7%)	8.5 b (77.3%)
T3	BCP425D 0.05% v/v	38,5 a	18 b (57.1%)	11 b (71.1%)	15.3 b (59.3%)
T4	BCP425D 0.1% v/v	41 a	10 b (76.2%)	16 b (57.9%)	9.3 b (75.3%)
T5	BCP425D 0.2% v/v	34 a	17 b (59.5%)	14 b (63.2%)	14.8 b (60.7%)
LSD (P=.05)		37.18	20.98	21.69	17.65
Stand. Deviation		25.28	14.27	14.75	12.00
CV		59.70	81.10	58.69	52.46

Table 8: Number of living *Anoidiella aurantii* on shoots

Date	13 September	20 September	21 October
Assessment Interval	7 DAAC	7 DAAD	31 DAAD
BBCH Crop	74	74	81
T1 Untreated	263.5 a	151.5 a	151.5 a
T2 Dursban 200 g/hL (A,D)	45.3 b (82.8%)	46.8 b (69.1%)	53.0 b (65.0%)
T3 Insegar 40 g/hL (A)	54.8 b (79.2%)	54.8 b (63.9%)	61.8 b (59.2%)
T4 BCP425D 0.05% (A,C)	88.5 b (66.4%)	84.5 b (44.2%)	84.5 b (44.2%)
T5 BCP425D 0.1% (A,C)	74.8 b (71.6%)	58.5 b (61.4%)	59 b (61.1%)
T6 BCP425D 0.2% (A,C)	65 b (75.3%)	52,5 b (65.3%)	57.3 b (62.2%)
T7 BCP425D 0.4% (A,C)	57.3 b (78.3%)	40.8 b (73.1%)	43.5 b (71.3%)
LSD (P=.05)	50.62	40.50	39.79
Stand. Deviation	34.68	27.75	27.26
CV	40.3	43.78	41.03

Table 9: Percentage of citrus fruits with *A. aurantii* (incidence). Efficacy (%) According To ABBOTT in brackets.

Date	21 October
Assessment Interval	31 DAAD
BBCH Crop	81
T1 Untreated	85.0 a
T2 Dursban 200 g/hL (A,D)	22.8 bc (73.2%)
T3 Insegar 40 g/hL (A)	37.8 b (55.6%)
T4 BCP425D 0.05% (A,C)	41.0 b (51.8%)
T5 BCP425D 0.1% (A,C)	38.0 b (55.3%)
T6 BCP425D 0.2% (A,C)	30.0 bc (64.7%)
T7 BCP425D 0.4% (A,C)	24.8 bc (70.9%)
LSD (P=.05)	13.30
Stand. Deviation	9.11
CV	24.49

Table 10: Number of citrus fruits without scales, with 1-3 scales (marketable) and with >3 scales (unmarketable)

Date	21 October		
Assessment Interval	31 DAAD		
BBCH Crop	81		
Number of Scales	Without Scales	1-3 Scales (Marketable)	>3 Scales (Unmarketable)
T1 Untreated	15.0 C	40.0 a	45.0 a
T2 Dursban 200 g/hL (A,D)	77.3 ab	13.3 bc	9.5 b
T3 Insegar 40 g/hL (A)	62.3 b	23.8 b	14.0 b
T4 BCP425D 0.05% (A,C)	59.0 b	27.0 b	14.0 b
T5 BCP425D 0.1% (A,C)	62.0 b	25.0 b	13.0 b
T6 BCP425D 0.2% (A,C)	70.0 ab	19.0 bc	11.0 b
T7 BCP425D 0.4% (A,C)	75.3 ab	14.3 bc	10.5 b
LSD (P=.05)	13.30	10.57	8.16
Stand. Deviation	9.11	7.24	5.59
CV	14.5	33.2	36.34

At the first application of the test items *A. aurantii* were well established. Initial
 5 attack was uniform in the untreated plot during trial development. Consequently,
 the results obtained can be considered as reliable.

The second evaluation 7 days after application A the treatment BCP425D 0.05%
 (A,C) showed a moderate efficacy of 61% on *A. aurantii* control considering
 number of living individuals on shoots. The variant BCP425D 0.1% (A,C) showed a
 10 moderate efficacy of 71% on *A. aurantii* control considering number of living
 individuals on shoots. The treatment BCP425D 0.2% (A,C) showed a moderate
 efficacy of 65% on *A. aurantii* control considering number of living individuals on
 shoots. The variant BCP425D 0.4% (A,C) showed a moderate efficacy of 67% on
A. aurantii control considering number of living individuals on shoots.

15

The treatment with the reference Dursban 200 g/hL (A,D) showed a good efficacy
 of 83% on *A. aurantii* control considering number of living individuals on shoots.

The reference Insegar 40 g/hL demonstrated a moderate efficacy of 64% on *A. aurantii* control considering number of living individuals on shoots.

The third evaluation 7 days after application B the treatment BCP425D 0.05% (A,C) showed a moderate efficacy of 53% on *A. aurantii* control considering number of living individuals on shoots. The variant BCP425D 0.1% (A,C) showed a moderate efficacy of 52% on *A. aurantii* control considering number of living individuals on shoots. The treatment BCP425D 0.2% (A,C) showed a moderate efficacy of 70% on *A. aurantii* control considering number of living individuals on shoots. The variant BCP425D 0.4% (A,C) showed a moderate efficacy of 73% on *A. aurantii* control considering number of living individuals on shoots. The treatment with the reference Dursban 200 g/hL (A,D) showed a moderate efficacy of 71% on *A. aurantii* control considering number of living individuals on shoots. The reference Insegar 40 g/hL demonstrated a low efficacy of 32% on *A. aurantii* control considering number of living individuals on shoots.

The fourth evaluation 7 days after application C the treatment BCP425D 0.05% (A,C) showed a moderate efficacy of 66% on *A. aurantii* control considering number of living individuals on shoots. The variant BCP425D 0.1% (A,C) showed a moderate efficacy of 72% on *A. aurantii* control considering number of living individuals on shoots. The treatment BCP425D 0.2% (A,C) showed a good efficacy of 75% on *A. aurantii* control considering number of living individuals on shoots. The variant BCP425D 0.4% (A,C) showed a good efficacy of 78% on *A. aurantii* control considering number of living individuals on shoots. The treatment with the reference Dursban 200 g/hL (A,D) showed a good efficacy of 83% on *A. aurantii* control considering number of living individuals on shoots. The reference Insegar 40 g/hL demonstrated a good efficacy of 79% on *A. aurantii* control considering number of living individuals on shoots.

The fifth evaluation 7 days after application C the treatment BCP425D 0.05% (A,C) showed a low efficacy of 44% on *A. aurantii* control considering number of living individuals on shoots. The variant BCP425D 0.1% (A,C) showed a moderate efficacy of 61% on *A. aurantii* control considering number of living individuals on shoots. The treatment BCP425D 0.2% (A,C) showed a moderate efficacy of 65% on *A. aurantii* control considering number of living individuals on shoots. The variant BCP425D 0.4% (A,C) showed a moderate efficacy of 73% on *A. aurantii* control considering number of living individuals on shoots. The treatment with the

reference Dursban 200 g/hL (A,D) showed a moderate efficacy of 69% on *A. aurantii* control considering number of living individuals on shoots. The reference Insegar 40 g/hL demonstrated a moderate efficacy of 64% on *A. aurantii* control considering number of living individuals on shoots.

5

At the last evaluation 31 days after application A the treatment BCP425D 0.05% (A,C) showed a low efficacy of 44% on *A. aurantii* control considering number of living individuals on shoots. The variant BCP425D 0.1% (A,C) showed a moderate efficacy of 61% on *A. aurantii* control considering number of living individuals on shoots. The treatment BCP425D 0.2% (A,C) showed a moderate efficacy of 62% on *A. aurantii* control considering number of living individuals on shoots. The variant BCP425D 0.4% (A,C) showed a moderate efficacy of 71% on *A. aurantii* control considering number of living individuals on shoots.

15 The treatment with the reference Dursban 200 g/hL (A,D) showed a moderate efficacy of 65% on *A. aurantii* control considering number of living individuals on shoots. The reference Insegar 40 g/hL demonstrated a moderate efficacy of 59% on *A. aurantii* control considering number of living individuals on shoots.

20 During the last evaluation the citrus fruits were assessed as classified depending on the number of scales present. The treatment BCP425D 0.05% (A,C) showed a moderate efficacy of 52% considering number of fruits with *A. aurantii* attack. The 86% of citrus fruits were classified as marketable which showed any scale or 1-3 scales. The variant BCP425D 0.1% (A,C) showed a moderate efficacy of 55% considering number of fruits with *A. aurantii* attack. The 86% of citrus fruits were classified as marketable which showed any scale or 1-3 scales. The treatment BCP425D 0.2% (A,C) showed a moderate efficacy of 65% considering number of fruits with *A. aurantii* attack. The 87% of citrus fruits were classified as marketable which showed any scale or 1-3 scales. The variant BCP425D 0.4% (A,C) showed a moderate efficacy of 71% considering number of fruits with *A. aurantii* attack. The 90% of citrus fruits were classified as marketable which showed any scale or 1-3 scales.

35 The treatment with the reference Dursban 200 g/hL (A,D) showed a moderate efficacy of 73% considering number of fruits with *A. aurantii* attack. The 91% of citrus fruits were classified as marketable which showed any scale or 1-3 scales. The reference Insegar 40 g/hL demonstrated a moderate efficacy of 56%

considering number of fruits with *A. aurantii* attack. The 86% of citrus fruits were classified as marketable which showed any scale or 1-3 scales.

The study demonstrated that the applications at the recommended dosage of the following test item: BCP425D 0.4% produced a consistent efficacy controlling *A. aurantii* of citrus in a period of about two months. Results were comparable, even better, with the references Dursban 200 g/hL and Insegar 40 g/hL.

Example 4: Storage stability

Tabel 11 represents an overview of different limonene formulations, differing from each other in the surfactant and wetting agent used. These compositions were exposed to different storage conditions and the results were noted. A summary is presented in Tabel 12.

All compositions comprise 600 ml limonene and 0.7 ml BHT. Surfactants with HLB-values classically used for emulsion of oil in water like dodecylbenzene sulfonate salt of calcium in solvent, ethoxylated (16EO) tristyrylphenol, ethoxylated (40 EO) castor oil, ethoxylated propoxylated fatty alcohol and ethoxylated propoxylated butanol showed an unstable formulation, with phase separation, gel formation or the formation of a precipitate either at storage at low temperature, -5 °C or at elevated temperatures, of 54 °C, representative of an long term storage stability test.

A most preferred embodiment of the invention is the formulation under code BA0893/14.

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Example 5: Classification

A product according to example 1, with 600 g limonene/l was unclassified for its toxicity by inhalation based on toxicology studies.

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This is surprising as the commercial product Prev-Am® with 60 g/l orange oil is classified Xn (harmful).

Table 11: Compositions of formulations tested in storage stability experiments

Formulation	BA0893/14	BA0894/14	BA0895/14	BA0896/14	BA0897/14	BA0898/14
Orange oil	600	600	600	600	600	600
BHT	0,7	0,7	0,7	0,7	0,7	0,7
ethoxylated (6EO) fatty alcohol	132,88	132,88				
dodecylbenzene sulfonate salt of triethanolamine	161,87		161,87	161,87	161,87	161,87
dodecylbenzene sulfonate salt of calcium		161,87				
ethoxylated (16EO) tristyrilphenol			132,88			
Ethoxylated (40 EO) castor oil				132,88		
ethoxylated propoxylated fatty alcohol					132,88	
ethoxylated propoxylated butanol						132,88

Tabel 12: Physical appearance of tested formulations

Test/Physical appearance	Invention	BA0894/14	BA0895/14	BA0896/14	BA0897/14	BA0898/14
after 14 days at room temperature	liquid, yellow, limpid, homogeneous	liquid, yellow, limpid, cloud at the bottom	liquid turbid with 2 phases	liquid turbid with 2 phases	gel, slightly turbid, homogeneous	gel, slightly turbid, homogeneous
after 14 days at 54°C	liquid, yellow, limpid, homogeneous	liquid, yellow, limpid, homogeneous	liquid turbid with 2 phases	liquid turbid with 2 phases	gel, slightly turbid, homogeneous	gel, slightly turbid, homogeneous
after 14 days at 0°C	liquid, yellow, limpid, small cloud at the bottom	liquid, yellow, limpid, small cloud at the bottom	liquid turbid with 2 phases	liquid turbid with 2 phases	gel, slightly turbid, homogeneous	gel, slightly turbid, homogeneous
after 14 days at -5°C	liquid, yellow, limpid, small cloud at the bottom	liquid, yellow, limpid, small cloud at the bottom	liquid turbid with 2 phases	liquid turbid with 2 phases	gel, slightly turbid, homogeneous	gel, slightly turbid, homogeneous

CLAIMS

1. Composition, able to form an emulsion when added to water, comprising more than 50 wt% limonene and an emulsifying surfactant, characterised in that the composition comprises less than 10 wt% water, the emulsifying surfactant has a hydrophilic-lipophilic balance (HLB) between 7 and 12, and the composition further comprises an anionic wetting agent.
2. Composition according to claim 1, characterised in that limonene is present as terpene-rich oil.
3. Composition according to claim 1 or 2, characterised in that limonene is present as citrus fruit oil.
4. Composition according to claim 3, wherein the citrus fruit oil is orange oil.
5. Composition according to any of the previous claims, comprising a non-ionic polymeric surfactant.
6. Composition according to any of the previous claims, comprising between 5 and 40 wt% surfactant expressed on the total weight of the composition.
7. Composition according to any of the previous claims, comprising between 5 and 15 wt% wetting agent expressed on the total weight of the composition.
8. Composition according to any of the previous claims, comprising an antioxidant selected from the list of diphenylamine, ethoxyquin, BHA (3-t-butyl-4-hydroxyanisole and 2-t-butyl-4-hydroxyanisole), BHT (2,6-di-tertbutyl-p-cresol), ascorbic acid, a tocopherol, a polyphenol and combinations thereof.
9. Composition according to any of the previous claims, comprising less than 1% antioxidant, by weight.
10. Composition according to claim 9, comprising less than 0.1% antioxidant by weight.
11. Composition according to any of the previous claims for use in the treatment of Acari or mites, Coccoidea or scales and Aleyrodidae or white flies.

12. Use of a composition according to any of claims 1 to 11, for treating a plant or a part of a plant as an acaricide or insecticide.

13. Use according to claim 12 against *Acari* (mites), *Coccoide* (scales) or *Aleyrodidae* (white flies).

14. Use according to claim 12 or 13, wherein the composition is diluted and applied as a water diluted spray at a dose rate of 60g to 1800g orange oil per hectare.

15. Method for making a composition according to any of claims 1 to 11, and packing said composition, comprising the following steps:

- mixing the components of the composition in the absence of oxygen;
- adding the composition to containers, and flushing the headspace of said composition containing containers with an inert gas.

16. Method for treating a plant or a part of a plant, wherein the method is for providing insecticidal activity against *Acari* or mites, *Coccoidea* or scales and *Aleyrodidae* or white flies, the method comprising the following steps:

- emulsifying a limonene ² comprising composition ²

~~comprising substance~~ according to any of claims 1 to 11 in water thereby obtaining an emulsion;

- applying said emulsion to said insects at an effective dose.



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**Anexo al Formulario 2004 de la OPE (EPO, *por sus siglas en inglés*),
Comunicación de conformidad con la Regla 71(3) del EPC**

Datos bibliográficos de la solicitud de patente Europea No. 14 189 557.3

Para la concesión prevista de la patente europea, los datos bibliográficos se establecen a continuación, para información:

Título de la invención:

- Limoneno: formulación y uso insecticida
- Limonene: formulation and insecticide use
- Limonen: Formulierung und Verwendung als insektizide
- Limonène: formulation et utilisation d'insecticide

Clasificación: INV. A01N27/00 A01P7/02 A01P7, 04

Fecha de presentación: 20.10.2014

Prioridad reivindicada:

Estados Contratantes*

para los cuales las tarifas
se han pagado:

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT
RO RS SE SI SK SM TR

Estados de Extensión*

para los cuales las tarifas
se han pagado:

Estados de Validación*

para los cuales las tarifas
se han pagado:

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- *) Si el plazo para el pago de las tasas de designación de acuerdo con la Regla 39 (1) EPC aún no ha expirado y el solicitante no ha retirado ninguna designación, **todos los Estados Contratantes/Estados de Extensión/Estados de la Validación** se consideran actualmente designados. Consulte también la Regla 71^a (3) EPC y, si corresponde, la Nota anterior para los usuarios del procedimiento de débito automático.
- **) Si uno o más solicitantes han designado diferentes Estados Contratantes, esto es indicado aquí.



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Solicitud No. 14 189 557.3 – 1454	Ref. 404403EP/SXO	Fecha 15.11.2017
Solicitante Arysta LifeScience Beleux Sprl		

Comunicación en virtud de la Regla 71(3) EPC

1. Intención para conceder

Se le informa que la división examinadora tiene la intención de conceder una patente Europea sobre la base de la solicitud anterior, con el texto y los dibujos y los datos bibliográficos relacionados como se indica a continuación.

Se adjunta una copia de los documentos pertinentes.

1.1. En el texto para los Estados Contratantes:

AL AT BE BG CH CY CZ DE DK EE ES FI FA GB GR HR HU IE IS IT LI LT LU
LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Descripción, Páginas

1, 5-9, 11, 13, 14, 17-31	originalmente presentadas	
2, 2a	presentadas electrónicamente en	26-10-2016
4, 10, 12, 16	presentadas electrónicamente en	05-07-2017
3, 15	presentadas electrónicamente en	08-09-2017

Reivindicaciones, Números

1-16	presentadas electrónicamente en	08-09-2017
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Con las siguientes modificaciones a los documentos mencionados anteriormente propuestos por la división

Descripción, Páginas	2a, 6-10, 12, 14, 15
Reivindicaciones, Números	16

Comentarios

Descripción adaptada a las reivindicaciones modificadas (Art. 84 EPC). La redacción de la reivindicación 16 se ha adaptado a la redacción de las reivindicaciones 1-11 (Art. 84 EPC, claridad).

1.2. Datos bibliográficos

El título de la invención en los tres idiomas oficiales de la Oficina Europea de Patentes, la clasificación internacional de la patente, los estados contratantes designados, el (los) nombre(s) registrado(s) del (de los) solicitante(s) y los demás datos bibliográficos se muestran en el formulario **EPO 2056** (adjunto).

2. Invitación

Usted está invitado, **dentro de un período no extensible de cuatro meses** de notificación de esta comunicación a,

2.1. Aprobar el texto comunicado anteriormente y verificar los datos bibliográficos (Regla 71 (5) EPC)

(1)	Presentando una traducción de la(s) reivindicación(es) en los otros dos idiomas oficiales de la OEP	Código de Tarifa	EUR
(2a)	Pagando la tarifa de concesión, incluida la tarifa de publicación:	007	925.00
	menos cualquier cantidad ya pagada (Regla 71a(5) EPC):		0.00
		Cantidad Total:	925.00
(3)	Pagando las tarifas de reivindicaciones adicionales de acuerdo con la Regla 71(4) EPC;		
	número de tarifas de reivindicaciones a pagar: 1	016	235.00
	menos cualquier cantidad ya pagada (Regla 71a(5) EPC):		0.00
		Cantidad Total:	235.00

Importante: Si las traducciones de las reivindicaciones y tarifas ya han sido presentadas y pagadas respectivamente en respuesta a una comunicación previa bajo la Regla 71(3) EPC, por ejemplo, en el caso de la reanudación del examen después de la aprobación (ver Pautas C-V, 6), **el acuerdo sobre el texto que se concederá** (Regla 71a(1) EPC) debe expresarse dentro del mismo límite de tiempo (por ejemplo, aprobando el texto y verificando los datos bibliográficos, confirmando que los procedimientos de concesión pueden continuar con los documentos en el expediente y/o indicando qué traducciones de las declaraciones en el expediente se van a utilizar).

Nota 1: Consulte "Notas sobre pagos de tarifas" a continuación.

Nota 2: Cualquier cantidad excedente "negativa" será reembolsada cuando se haya emitido la decisión de concesión (Formulario EPO 2006A).

Nota 3: Para el cálculo de la tasa de concesión en virtud del Artículo 2(2), No. 7, RFees (antigua estructura de tasas), el número de páginas se determina sobre la base de una copia en limpio de los documentos de la solicitud, en la que el texto eliminado, como resultado de las modificaciones por parte de la división examinadora, no se muestra. Dicha copia en limpio está disponible solo a través de la búsqueda de archivos en línea.

2.2. O, en el caso de desaprobación, solicitar modificaciones o correcciones razonables al texto comunicado anteriormente o mantener el último texto presentado por usted (Regla 71(6) EPC).

En este caso, las traducciones de las reivindicaciones y los pagos de tasas mencionados en el punto 2.1 anterior NO se deben pagar.

Los términos "modificación(es)" y "corrección(es)" se refieren únicamente a modificaciones o correcciones de los documentos de la solicitud y no de otros documentos (por ejemplo, datos bibliográficos, la designación del inventor, etc.).

Si se presentan modificaciones, debe identificarlas e indicar las bases para ellas en la solicitud tal como fue presentada. El incumplimiento de cualquiera de los requisitos puede conducir a una comunicación de la división examinadora solicitando que corrija esta deficiencia (Regla 137(4) EPC).

2.3. Datos bibliográficos

Cuando solicite un cambio o una corrección de datos bibliográficos en respuesta a la comunicación de la Regla 71(3), esto **no** causará el envío de una nueva comunicación bajo la Regla 71(3) EPC. Igualmente tendrá que pagar las tarifas y las traducciones de documentos en respuesta a la comunicación de la Regla 71(3) en el caso 2.1 anterior, a menos que también presente una solicitud razonable de modificaciones o correcciones en respuesta a la comunicación de la Regla 71(3) (ver caso 2.2 arriba).

3. Pérdida de derechos

Si ninguna de las dos acciones posibles anteriores (véanse los puntos 2.1 o 2.2) se realiza a su debido tiempo, la solicitud de patente Europea se considerará retirada (Regla 71(7) EPC).

4. Procedimiento adicional

4.1. En el caso del punto 2.1 anterior

4.1.1. Se emitirá la decisión de conceder la patente Europea, y la **menCIÓN de la concesión** de la patente se publicará en el Boletín de la Patentes Europeas, si se cumplen los requisitos relativos a la traducción de las reivindicaciones y el pago de todas las tasas y si existe un acuerdo sobre el texto que se concederá (Regla 71a(1) EPC).

Nota sobre el pago de la tasa de renovación:

Si una tasa de renovación vence antes de la próxima fecha posible para la publicación de la **menCIÓN de la concesión** de la patente Europea, la publicación se efectuará sólo después de que se haya pagado la tasa de renovación y cualquier tasa adicional (Regla 71a(4) EPC).

De conformidad con el artículo 86(2) EPC, la obligación de abonar las tasas de renovación a la Oficina Europea de Patentes termina con el pago de la tasa de renovación correspondiente al año en que se publique la menCIÓN de la concesión de la patente Europea.

Nota sobre el pago de la(s) tasa(s) de designación:

Si la(s) tasa(s) de designación debe(n) ser pagada(s) después de la comunicación bajo la Regla 71(3) EPC, la mención de la concesión de la patente europea no se publicará hasta que se paguen estas tarifas (Regla 71a(3) EPC).

4.1.2. Después de la publicación, la **descripción de la patente Europea** puede descargarse gratuitamente del servidor de publicación EPO <https://data.epo.org/publication-server>.

4.1.3. **Presentación de traducciones en los estados contratantes**

En lo que respecta a los requisitos de traducción prescritos por los estados contratantes, en virtud del Artículo 65(1) EPC, por favor consulte el sitio web de la Oficina Europea de Patentes.

www.epo.org - Derecho y práctica -> Textos legales, Ley nacional relacionada con el EPC

www.epo.org - Derecho y práctica -> Todos los textos legales --> Acuerdo de Londres

En el caso de una extensión válida o validación

Con respecto a los requisitos de traducción prescritos por los estados de extensión o validación, consulte el sitio web de la Oficina Europea de Patentes www.epo.org - Derecho y práctica -> Textos legales, Ley nacional relacionada con el EPC

No presentar una traducción prescrita en un estado contratante, o en un estado de extensión o de validación, puede dar como resultado que la patente se considere nula *ab initio* en el estado en cuestión (Art. 65(3) EPC).

4.2. **En el caso del punto 2.2 anterior**

Si la presente comunicación bajo la Regla 71(3) EPC se basa en una solicitud auxiliar y, dentro del límite de tiempo, usted mantiene la solicitud principal o una solicitud de clasificación más alta que no es admisible, la solicitud será rechazada (Artículo 97(2) EPC).

Si la división examinadora presta su consentimiento a las modificaciones o correcciones solicitadas, emitirá una nueva comunicación de conformidad con la Regla 71(3) EPC; de lo contrario, reanudará los procedimientos de examen (Regla 71(6) EPC).

5. Presentación de una solicitud divisional

Cualquier solicitud divisional relacionada con esta solicitud de patente europea debe presentarse directamente en la Oficina Europea de Patentes de Múnich, La Haya o Berlín y estará en el idioma del trámite para la presente solicitud, o si esta última no estaba en un idioma oficial de la OEP, la solicitud divisional puede ser presentada en el idioma de la presente solicitud tal como fue presentada (vea el Artículo 76 (1) y la Regla 36 (2) EPC). Cualquier solicitud divisional debe presentarse mientras la presente solicitud aún está pendiente (Regla 36 (1) EPC; Directrices A-IV, 1.1.1).

6. Notas sobre pagos de tasas

6.1. Realizar pagos

Para los pagos realizados a través de una cuenta de depósito, tenga en cuenta que a partir del 1 de diciembre de 2017, los pedidos de débito solo se realizarán si se presentan en un formato procesable electrónicamente (xml), utilizando un medio aceptado de presentación según lo establecido en Arreglos para cuentas de depósito (ADA, *por sus siglas en inglés*), publicado en la publicación Complementaria en el Diario Oficial.

Toda la información relevante relacionada con los modos de pago de las tarifas a la OEP se puede obtener desde el sitio web de la OEP en **"Making Payments"**.

6.2. Información sobre los montos de las tasas

Las tarifas de trámite se ajustan generalmente cada dos años, en años pares, con efecto a partir del 1 de abril. Por lo tanto, antes de hacer un pago, las partes deben verificar los montos que realmente se deben pagar en la fecha de pago utilizando la versión aplicable del Programa de tarifas y gastos, publicado como un Suplemento al Diario Oficial de la OEP, disponible en el sitio web de

la OEP (www.epo.org) en www.epo.org/schedule-of-fees. La tabla del "Programa de tarifas" permite ver, descargar y buscar montos de tarifas individuales, actuales y anteriores.

6.3. Nota para los usuarios del procedimiento de débito automático

La tarifa de la concesión, incluyendo la tarifa de publicación, y las tasas de reivindicaciones adicionales debidas según la Norma 71(4) EPC se debitarán automáticamente en la fecha de presentación de las traducciones de las reivindicaciones, o en el último día del período de esta comunicación. Sin embargo, si la(s) tasa(s) de designación se debe(n) pagar como se establece en la Norma 71a(3) EPC y/o una tarifa de renovación se vence según lo establecido en la Norma 71a(4) EPC, estas deben pagarse por separado por otra forma de pago permitida para no retrasar a publicación de la mención de la concesión. Lo mismo aplica en estas circunstancias al pago de las tarifas de extensión y validación. Lo mismo aplica en estas circunstancias al pago de las tarifas de extensión y validación.

Nota: Si una exención se expresa en respuesta a una comunicación de la Regla 71(3) (véase OJ EPO 2015, A52), la tarifa de concesión, incluyendo la tasa de publicación/impresión y cualquier tasa por reivindicaciones adicionales, no se debitará automáticamente al cliente. Estas tarifas deben pagarse por separado mediante otro medio de pago permitido según las Reglas relacionadas con las Tasas.

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IV.2. Clasificación de patente

La clasificación ha cambiado. Ahora, es la siguiente:

INV. A01N27/00 A02P7/02 A01P7/04

IV.3. Título de la invención

El título indicado en la solicitud de patente publicada permanece sin cambios.

Se lee como sigue:

Limoneno: formulación y uso insecticida

Limonene: formulation and insecticide use

Limonen: Formulierung und Verwendung als insektizide

Limonène: formulation et utilisation d'insecticide

IV.4. Documentación

3.11.17

Fecha

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