



Basic Substance

L-cysteine

SANTE/11056/2019– rev.4

24 March 2020

Final Review report for the basic substance **L-cysteine**
finalised in the Standing Committee on Plants, Animals, Food and Feed
on 24 March 2020
in view of the approval of L-cysteine as basic substance
in accordance with Regulation (EC) No 1107/2009¹

1. Procedure followed for the evaluation process

This review report has been established as a result of the evaluation of L-cysteine, made in the context of the assessment of the substance provided for in Article 23 of Regulation (EC) No 1107/2009² concerning the placing of plant protection products on the market, with a view to the possible approval of this substance as basic substance.

In accordance with the provisions of Article 23(3) of Regulation (EC) No 1107/2009, the Commission received on 9 February 2018 an application from Soleo-EcoSolutions, hereafter referred to as the applicant, for the approval of the substance L-cysteine as basic substance. This application was not complete and a revised application has been received on 4 June 2018.

The application and attached information were distributed to the Member States and European Food Safety Authority (EFSA) for comments. The applicant was also allowed to address collated comments and provide further information to complete the application.

In accordance with the provisions of Article 23(4) of Regulation (EC) No 1107/2009 the Commission required scientific assistance on the evaluation of the application to the EFSA, who delivered its views on the specific points raised in the commenting phase.

EFSA submitted to the Commission the results of its work in the form of a technical report for L-cysteine on 29 January 2019³.

The Commission examined the application, the comments by Member States and EFSA and the EFSA Technical report on the substance together with the additional information and comments

¹ Review Report established in accordance with Art. 13 of Regulation (EU) No 1107/2009; it does not necessarily represent the views of the European Commission.

² OJ L 309, 24.11.2009, p. 1-50.

³ EFSA (European Food Safety Authority), 2019. Technical report on the outcome of the consultation with Member States and EFSA on the basic substance application for L-cysteine for use in plant protection as insecticide. EFSA supporting publication 2019:EN-1562. 46 pp. doi:10.2903/sp.efsa.2019.EN-1562.

provided on it by the applicant, before finalising the current draft review report, which was referred to the Standing Committee on Plants, Animals, Food and Feed for examination. The draft review report was finalised by the Standing Committee on 24 March 2020.

The present review report contains the conclusions of the final examination by the Standing Committee. Given the importance of the EFSA technical report, and the comments and clarifications submitted, all these documents are also considered to be part of this review report.

2. Purposes of this review report

This review report, including the background documents and appendices thereto, has been developed in support of **Commission Implementing Regulation (EU) 2020/642⁴** concerning the approval of L-cysteine as basic substance under Regulation (EC) No 1107/2009.

The review report will be made available for public consultation by any interested parties.

Without prejudice to the provisions of Regulation (EC) No 178/2002⁵, in particular with respect to the responsibility of operators, following the approval of L-cysteine as basic substance, operators are responsible for using it for plant protection purposes in conformity with the legal provisions of Regulation (EC) No 1107/2009 and the conditions established in the sections 4, 5 and Appendices I and II of this review report.

EFSA will make available to public all background documents and the final Technical Report of EFSA as well as the application without the Appendices and excluding any information for which confidential treatment is justified in accordance with the provisions of Article 63 of Regulation (EC) No 1107/2009.

Products containing exclusively one or more basic substances do not require authorisation in line with the derogation set under Article 28 of Regulation (EC) No 1107/2009. As a consequence, no further assessment will be carried out on such products. However, the Commission may review the approval of a basic substance at any time in conformity with the provisions of Article 23(6) of Regulation (EC) No 1107/2009.

3. Overall conclusion in the context of Regulation (EC) No 1107/2009

The overall conclusion based on the application, including the results of the evaluation carried out with the scientific assistance of EFSA, and the comments and further additional information provided by the applicant to address the open points identified in the Technical report from EFSA, is that there are clear indications that it may be expected that L-cysteine fulfils the criteria of Article 23.

⁴ OJ L 150, 13.5.2020, p. 134.

⁵ OJ L 31, 1.2.2002 p. 1-24 - Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

L-cysteine is a food additive E 920 listed in Annexes II and III to Regulation (EC) No 1333/2008⁶ of the European Parliament and of the Council on food additives and it is also a flavouring additive (FL No 17.033) for food and feed, therefore it fulfils the criteria of a 'foodstuff' as defined in Article 2 of Regulation (EC) No 178/2002.

The application has been made for L-cysteine, however the documentation provided by the applicant refers to the use of L-cysteine hydrochloride. The specifications for food additive L-cysteine (E 920) are laid down in Commission Regulation (EU) No 231/2012⁷. According to this Regulation, the definition of food additive E 920 L-cysteine covers L-cysteine hydrochloride or hydrochloride monohydrate. It was therefore considered appropriate to define the scope of the application as covering a food additive L-cysteine (E 920).

The proposed use as basic substance is supported to control leaf cutting ants on all crops and forestry in the tropical areas.

According to the classification provided by companies to ECHA in REACH registrations, L-cysteine hydrochloride can cause serious eye irritation. The irritating properties of L-cysteine (skin irritant cat. 2, eye irritant cat. 2 and respiratory irritant) are also mentioned in the EFSA technical report. However, L-cysteine will not be a substance of concern in the product according to the definition in Article 3(4) of Regulation 1107/2009 when applying the CLP Regulation on classification and labelling of mixtures (Regulation (EC) No 1272/2008⁸) given the proposed concentration of L-cysteine in the product (8% in wheat flour).

Moreover, the supported basic substance use is referring to products currently on the market and packaged and labelled in accordance with Regulation (EC) No 1272/2008 including among others information to enable users to take the necessary measures as regards the protection of human health, safety and the environment.

Considering the method of application (e.g. on nests of ants), no exposure of consumers to residues on edible crops is expected.

EFSA indicated in its technical report that the information provided in relation to the fate and behaviour of L-cysteine in the environment was limited. L-cysteine is a macronutrient and a normal component of protein, naturally present in animals, plants and microorganisms. The environmental exposure from the intended use is likely to be negligible compared to background exposure.

In the area of ecotoxicology, EFSA identified a data gap as regards exposure of aquatic organisms. However, given the low hazard identified, the risk to aquatic organisms from intended uses of L-cysteine as a basic substance is expected to be negligible.

Therefore, considering the EFSA conclusions, the rate of application and the conditions of use which are described in detail in Appendix I and II, it is concluded that the use of L-cysteine, when carried out respecting precautionary statements for risk mitigation measures which are known to the operator based on labelling in accordance to Regulation 1272/2008, would not lead

⁶ OJ L 354, 31.12.2008, p. 16.

⁷ OJ L 83, 22.3.2012, p. 1-295.

⁸ OJ L 353, 31.12.2008, p. 1-1355

to concerns for human health. Furthermore, no residues or unacceptable effects on the environment are expected given the conditions of use and its degradation pathway.

L-cysteine is not a substance of concern if used according to the conditions as described in Appendix I and II, does not have an inherent capacity to cause endocrine disrupting, neurotoxic or immunotoxic effects and is not predominantly used for plant protection purposes but nevertheless is useful in plant protection in a product consisting of the substance and wheat flour. Finally, it is not placed on the market as a plant protection product.

It can be concluded that the substance has neither an immediate or delayed harmful effect on human or animal health nor an unacceptable effect on the environment when used in accordance with the supported uses as described in Appendix II.

In fact, these indications were reached within the framework of the uses which were supported by the applicant and mentioned in the list of uses supported by available data (attached as Appendix II to this review report) and therefore, they are also subject to compliance with the particular conditions and restrictions in sections 4 and 5 of this report.

Extension of the use pattern beyond those described above will require an evaluation at Community level in order to establish whether the proposed extensions of use can still satisfy the requirements of Article 23 of Regulation (EC) No 1107/2009.

4. Identity and biological properties

The main properties of L-cysteine are given in Appendix I.

L-cysteine should be of food grade.

It has been established that for L-cysteine of food grade quality as notified by the applicant, the following manufacturing impurities are considered, on the basis of information currently available, of toxicological or environmental concern:

Arsenic: not more than 1.5 mg/kg,

Lead: not more than 5 mg/kg.

5. Particular conditions to be taken into account in relation to the uses as basic substance of L-cysteine

L-cysteine must be identified by given specifications in Appendix I and must be used in compliance with method of preparation and condition of use as reported in Appendices I and II.

The following conditions for use deriving from assessment of the application have to be respected by users:

- *L-cysteine is to be used in a mixture with matrix (wheat flour, food grade) at a concentration of maximum 8%;*
- *When handling L-cysteine, users shall respect the precautionary statements reported on the label or/and the safety data sheet, where relevant. In particular, users shall use appropriate personal protective equipment during the preparation of the product.*

L-cysteine should meet the specification from Commission Regulation (EU) No 231/2012 of 9 March 2012 laying down specifications for food additives listed in Annexes II and III to Regulation (EC) No 1333/2008 of the European Parliament and of the Council⁹.

6. List of studies to be generated

No further studies were identified which were at this stage considered necessary.

7. Updating of this review report

The information in this report may require to be updated from time to time to take account of technical and scientific developments, as well as of the results of the examination of any information referred to the Commission in the framework of Article 23 of Regulation (EC) No 1107/2009. Any such adaptation will be finalised in the Standing Committee on Plants, Animals, Food and Feed, in connection, as appropriate, with any amendment of the approval conditions for L-cysteine in Part C of Annex of the Regulation (EC) No 540/2011¹⁰.

8. Recommended disclosure of this review report

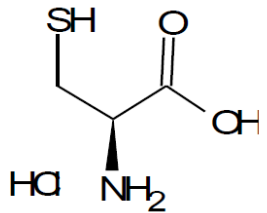
Considering the importance of the respect of the approved conditions of use and the fact that a basic substance will not be placed on the market as plant protection product hence, no further assessment will have to be carried out on it, it is very important to inform not only applicants but also potential users of the substance on the existence of this review report.

It is therefore recommended that the competent authorities of Member States will make available such report to general public and operators by means of their national relevant websites and by any other appropriate form of communication to ensure that the information reaches potential users.

⁹ OJ L 83, 22.3.2012, p. 1–295.

¹⁰ OJ L 153, 11.6.2011, p. 1–186.

APPENDIX I
Identity and biological properties
L-cysteine

Common name (ISO)	L-cysteine (E 920) (not ISO)
Chemical name (IUPAC)	L-cysteine hydrochloride (1:1)
Chemical Name (CA)	L-cysteine hydrochloride, L-cysteine hydrochloride monohydrate
Common names	L-cysteine, R(+)-cysteine, L-cysteine hydrochloride, L-cysteine hydrochloride monohydrate
CAS No	52-89-1 (L-cysteine hydrochloride) 7048-04-6 (L-cysteine hydrochloride monohydrate)
CIPAC, EINECS	200-157-7 (EINECS, L-cysteine hydrochloride) 615-117-8 (EINECS, L-cysteine hydrochloride monohydrate)
FAO SPECIFICATION	None
Purity	Min. 98.0 % L-cysteine hydrochloride (on anhydrous basis) Food grade in conformity with Commission Regulation (EU) No 231/2012 of 9 March 2012 laying down specifications for food additives listed in Annexes II and III to Regulation (EC) No 1333/2008 of the European Parliament and of the Council ¹¹ . To be used in a mixture with matrix (wheat flour, food grade) at a concentration of maximum 8% (of L-cysteine hydrochloride, on anhydrous basis).
Relevant impurities	max. 1.5 mg/kg As max. 5 mg/kg Pb
Molecular mass and structural formula	157.6 g/mol (L-cysteine hydrochloride) 

¹¹ OJ L 83, 22.3.2012, p. 1–295.

Mode of Use	Hand-held spreader
Preparation to be used	RB (bait, ready for use) 1. Mix 5 g to 80 g of L-cysteine hydrochloride anhydrous with matrix (food grade wheat flour type 55) up to 1 kg. 2. Add 420 ml of tap water and stir till a homogenous paste is obtained. 3. Pass the paste through mincer to obtain strands of dough of ca 0.3 cm in diameter and 15 cm - 40 cm in length. 5. Let dry in open air for 72 hours (to avoid the degradation of the preparation during storage before the application). 6. Shred to obtain coarse granules of sizes between 2 mm – 4 mm (small enough to be carried by ants).
Function of plant protection	Insecticide

APPENDIX II
List of uses supported by available data
L-CYSTEINE

Crop and/or situation (a)	Example product name as available on the market	F G I (b)	Pests or group of pests controlled (c)	Formulation		Application				Application rate per treatment		Total rate	PHI (days) (m)	Remarks
				Type (d-f)	Conc of a.s. (g/kg) (i)	Method kind (f-h)	Growth stage and season (j)	Number min max (k)	Interval between applications (min)	kg product/ha min max	kg a.i./ha min max (kg/ha) (l)	kg a.i./ha min max (kg/ha) (l)		
All crops and forestry in tropical areas	L-cysteine hydrochloride	F	Leaf cutting ants	RB	Min 5 g/kg Max 80 g/kg L-cysteine in matrix (wheat flour)	Hand-held spreader	Post swarming (July)	1-3	1 month	3 - 36 kg granules/ha	Min 0.015 kg a.s./ha Max 2.88 kg a.s./ha ¹²	0.015 kg a.s./ha to 8.64 kg a.s./ha	n.a.	Used as an insecticide against ants. Application is made by hand on nest of ants. The application can be renewed if necessary with a maximum of 3 applications. Minimum/Maximum number of nests by hectare: 10 - 120

- (a) For crops, the EU and Codex classification (both) should be taken into account ; where relevant, the use situation should be described (e.g. fumigation of a structure)
- (b) Outdoor or field use (F), greenhouse application (G) or indoor application (I)
- (c) e.g. pests as biting and sucking insects, soil born insects, foliar fungi, weeds or plant elicitor
- (d) e.g. wettable powder (WP), emulsifiable concentrate (EC), granule (GR) etc..
- (e) GCPF Codes – GIFAP Technical Monograph N° 2, 1989
- (f) All abbreviations used must be explained
- (g) Method, e.g. high volume spraying, low volume spraying, spreading, dusting, drench
- (h) Kind, e.g. overall, broadcast, aerial spraying, row, individual plant, between the plant – type of equipment used must be indicated
- (i) g/kg or g/L. Normally the rate should be given for the active substance (according to ISO)
- (j) Growth stage at last treatment (BBCH Monograph, Growth Stages of Plants, 1997, Blackwell, ISBN 3-8263-3152-4), including where relevant, information on season at time of application
- (k) Indicate the minimum and maximum number of application possible under practical conditions of use
- (l) The values should be given in g or kg whatever gives the more manageable number (e.g. 200 kg/ha instead of 200 000 g/ha or 12.5 g/ha instead of 0.0125 kg/ha)
- (m) PHI - minimum pre-harvest interval

¹² 300 g of granules per nest multiplied by 120 nest/ha = 36 kg product/ha. Considering a maximum of 8% L-cysteine in the product, the maximum application rate per treatment of L-cysteine is 2.88 kg/ha.