SAFETY DATA SHEET

Acc. Regulation (EC) No 1907/2006 (REACH)

Trade Name: AMINO POWER PLUS liquid

Printing date 13/05/2025 Reviewed on 03/05/2025

1. IDENTIFICATION OF SUBSTANCE

Product details

Trade name:	AMINO POWER PLUS liquid
Article number:	01102
Application of the substance/ the preparation:	Foliar fertilizer
Manufacturer/ Supplier:	Humintech GmbH Am Pösenberg 9-13 41517 Grevenbroich Tel.: +49 2181 70 676 0 Fax: +49 2181 70 676 22 www.humintech.com info@humintech.com
Information:	See: Section 16
Emergency information:	See: Manufacturer/ Supplier (working hours only)

2. HAZARDS IDENTIFICATION

2.1 Classification of the mixture according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]:
Aquatic Chronic 4, H413
Most important noxious effects: see section 9-12.

2.2 Label elements according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]:
Hazard pictograms:
No hazard pictograms.
Signal word:
No hazard words.

2.3 Hazard statements:
H413 May cause long lasting harmful effects to aquatic life.
Precautionary statements:
P273 Avoid release to the environment.
P501 Dispose of contents/container to an approved waste disposal plant in accordance with local/regional/national/international regulation.

GHS Supplemental information:
Not applicable.

2.4 Other hazards:
Adverse physicochemical effects and adverse health effects:
None.
Adverse environmental effects:
None.
Other adverse effects:
None.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances:
Not applicable

3.2 Mixtures:

Substance name	Registration No.	CAS No.	EINECS No.	Classification 1272/2008/EC [CLP]	Content (w/w)
Aminoacids and peptides mixture	Chemically modified natural polymer			53,8%	53,8%
Ferrous sulfate	01-2119513203-57-XXXX	7720-78-7	231-753-5	Acute Tox. 4 H302 Eye Irrit. 2 H319 Skin Irrit. 2 H315	0,544%
Manganese sulfate	01-2119456624-35-XXXX	7785-87-7	232-089-9	STOT RE 2 H373 Eye Dam. 1 H318 Aquatic Chronic 2 H411	0,275%
Boric acid	01-2119486683-25-XXXX	10043-35-3	233-139-2	Repr. 1B H360FD	0,29%
Zinc Sulfate	01-2119474684-27-XXXX	7733-02-0	231-793-3	Acute Tox. 4 H302 Eye Dam. 1 H318 Aquatic Acute 1 H400 Aquatic Chronic 1 H410 M=1	0,025%
Diammonium Molybdate	01-2119486945-19-XXXX	27546-07-2	248-517-2	Not classified	0,0088%
Cobalt sulfate	Not available	10124-43-3	233-334-2	Carc 1B H350i, Muta. 2 H341 Repr. 1B H360F Acute Tox. 4 H302 Resp. Sens. 1 H334 Skin Sens. 1H317 Aquatic Acute 1 H400 Aquatic Chronic 1 H410 M=10	0,0026%
Water	-	7732-18-5	231-791-2	-	Up to 100%

The extended text relative to hazard statements (H) is reported in section 16.

The product contains boric acid, substance identified as SVHC as defined in Article 57 of REACH Regulation and included in the list of substances candidate to eventual authorization

4. FIRST AID MEASURES

4.1 Description of first aid measures

General notes
There are not predictable hazardous effects in the normal use of the mixture but some instructions must be followed.

After inhalation:
If breathed, move person from danger area and provide for fresh air and seek medical advice.
If not breathing give artificial respiration.

After skin contact:
Wash with water and if irritation occurs contact a physician.

After eye contact:
Rinse immediately for 15 minutes with copious quantities of clean water keeping the eyelids well open in order to assure an adequate rinsing and seek medical advice.

After swallowing:
Rinse out the mouth with copious quantity of water and seek medical advice and show this container or label.
Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed
Symptoms and effects for prolonged expositions are reported in section 11.

4.3 Indication of any immediate medical attention and special treatment needed
No data.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Appropriate extinguishing media:
Take into account the materials present in its vicinity. In the case of fire due to nearby materials, water, foam, dry chemicals or carbon dioxide can be used.

Unsuitable extinguishing media:
None known.

5.2 Special hazards arising from the mixture
In case of fire due to nearby materials, the product could release sulphurous anhydride and other pungent and stifling smokes.

5.3 Advice for firefighters
Coordinate extinguishing measures taking into account local and environment circumstances. Use respiratory protection equipment that supplies air from an independent source (auto-respirator) and suitable protective clothing.

5.4 Other information
Avoid to flush the water used for the extinguishing in surface-water/drains. If this occurs, notify to competent authorities. Contain and collect water used to extinguish in accordance with legislation in force.

6. ACCIDENTIAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:
Obey reasonable safety precautions using protective gloves, safety glasses and suitable clothing and practice according to good hygiene and manufacturing procedures keeping precautionary measures against the forming of inhalable aerosols/dust.

6.2 Environment precautionary measures:
Collect the product for the re-use how much is possible and limit the pouring area; do not introduce the product and waste into sewage and surface water and dispose according to law prescriptions.

6.3 Methods and material for containment and cleaning up:
Wash with water.

6.4 Reference to other sections:
Further information on exposure controls/personal protection equipment and further disposal considerations are reported in sections 8 and 13 of this safety data sheet.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling:
The normal safety precautions for handling chemicals should be always be observed.

Personal protection measures:
Obey reasonable safety precautions and practice according to good industrial personal hygiene and good occupational practice using suitable protective gloves, safety glasses and clothing.
There are no particular rules if the product is properly used. See section 8.

Firefighting precautionary measures:

On the basis of current knowledge, the handling of the product doesn't present hazards if the normal measures for preventive fire protection of good working practices are applied. Work in clean and ventilated areas.

Measures to prevent aerosol and dust generation:
Use the product according to good manufacturing procedures.

Measures for environment protection:
Use the product following the suggested precautions and procedures.

General occupational hygiene recommendations:
Do not eat, drink and smoke in work areas.
Wash hands after use. Remove clothing and protective equipment before entering eating areas.

7.2 Conditions for safe storage, including any compatibilities:
Store the product in clean and suitable sealed containers in suitable places in order to maintain unchanged the original characteristics of the product.

7.3 Specific end use(s):
There are no particular rules to follow.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1 Control parameters
Occupational exposure limit values:

Amino acids and peptides mixture: No specific occupational exposure limits.
Iron (II) sulfate heptahydrate: TLV-ACGIH TWA/8h 1 mg/m3.

DNEL values referred to soluble Iron salts (as Fe):

Population	Exposure	Via	Effect	Value
consumer	repeated dose	Oral	local	1,45 mg/kg/day
consumer	repeated dose	Dermal	local	1,45 mg/kg/day
Worker	repeated dose	Dermal	local	2,85 mg/kg/day
consumer	repeated dose	Inhalation	local	2,5 mg/kg/day
Worker	repeated dose	Inhalation	local	10 mg/kg/day

PNEC values referred to soluble Iron salts (as Fe):

Compartment	Value	Method
Sediment	49,5 g/kg sediment/dry weight	110% natural background

Sewage treatment plant	500 mg/L	sensitivity distribution
Soil	55 g/kg soil/dry weight	110% natural background

Manganese (II) sulfate monohydrate: TLV-ACGIH TWA/8h 0,2 mg/m^3.

DNELs values referred to Manganese sulfate monohydrate:

Exposure Route	Exposure Type	Application Area	Value
Dermal Acute	systemic effects	Worker	No information available
Inhalation Acute	systemic effects	Worker	No information available
Oral Acute	systemic effects	Worker	Exposure based waiving
Dermal Acute	local effects	Worker	No information available
Dermal Long-term	systemic effects	Worker	0.00414 mg/kg bw/day
Inhalation Long-term	systemic effects	Worker	0.2 mg/m³
Oral Long-term	systemic effects	Worker	Exposure based waiving
Dermal Long-term	local effects	Worker	No information available
Dermal Acute	systemic effects	Consumer	No information available
Inhalation Acute	systemic effects	Consumer	No information available
Oral Acute	systemic effects	Consumer	Exposure based waiving
Dermal Acute	local effects	Consumer	No information available
Dermal	Long-term – systemic effects	Consumer	0.0021 mg/kg bw/day
Inhalation	Long-term – systemic effects	Consumer	0.043 mg/m³
Oral	Long-term – systemic effects	Consumer	Exposure based waiving
Dermal	Long-term – systemic effects	Consumer	No information available

PNEC values referred to Manganese sulfate monohydrate:

Aqua (fresh water):	0,0128 mg/L
Aqua (marine water):	0,0004 mg/L
Aqua (intermittent release):	0,03 mg/L
Sediment (fresh water):	0,0114 mg/kg sediment dw
Sediment (marine water):	0,00114 mg/kg sediment dw
STP (sewage treatment plant):	56 mg/L
Soil:	25,1 mg/kg soil dw

Boric acid: TLV-TWA: 2mg/m3 (ACGIH) DNEL and PNEC values not available.

Soluble Zinc compounds:

State	8 hours-TWA mg/m³	15 minutes-STEL mg/m³	reference
USA	1	2	ACGIH (1991)
United Kingdom	1	2*	HSE (1998)
Danmark	0,5		Arbejdstilsynet (1992)

*) This value is a 10 minutes-STEL

DNEL values referred to Zinc sulfate pentahydrate:

Exposure Route	Exposure Type	Application Area	Value
Dermal long-term	systemic effects	Worker	8,3 mg/kg
Inhalation long-term	systemic effects	Worker	1 mg/m³
Dermal long-term	systemic effects	Population	8,3 mg/kg
Inhalation long-term	systemic effects	Population	1,3 mg/m³
Oral long-term	systemic effects	Population	0,83 mg/m³

PNEC values referred to Zinc:

Aqua (fresh water):	20 µg/L
Aqua (marine water):	6,1 µg/L
Sediment (fresh water):	235,6 mg/kg dry weight (using the generic factor 0,5 for risk assessment)
Sediment (marine water):	113 mg/kg dry weight (using the generic factor 0,5 for risk assessment)
STP (sewage treatment plant):	52 µg/L
Soil:	106,8 mg/kg soil dry weight (using the generic factor 3)

All PNEC values are added values, natural backgrounds need to be taken into account when characterizing the risk. PNEC aqua data are based on 23 species having 8 taxonomic groups and are obtained in different conditions. PNEC sediment data are based on 7 benthic species and are obtained in different conditions. PNEC soil data are based on 18 plants, 8 invertebrate species and 17 microbial processes.

Diammonium molybdate: TWA/8h 5 mg/m³. DNEL inhalable 19,8 mg/m³ (11,17 mg Mo/m³)

PNEC values:

Aqua (fresh water):	12,7 mg Mo/L (22,5 mg $(NH_4)_2Mo_2O_7$/L)
Aqua (marine water):	1,9 mg Mo/L (3,4 mg $(NH_4)_2Mo_2O_7$/L)
Sediment (fresh water):	22,6 g Mo/kg dry weight (40,0 g $(NH_4)2Mo_2O_7$/kg dry weight)
Sediment (marine water):	1,98 g Mo/kg dry weight (3,51 g $(NH_4)_2Mo_2O_7$/kg dry weight)
Soil:	11,8-188 mg Mo/kg soil dry weight (20,9-333 mg $(NH_4)_2Mo_2O_7$/kg dry weight) depending on type soil
STP (sewage treatment plant):	21,7 mg Mo/L (38,4 mg $(NH_4)_2Mo_2O_7$/L)

Cobalt sulfate: TLV-ACGIH 0,02 mg/m3. DNEL and PNEC values not available.

Biological limit values:
Data not available

8.2.1 Appropriate engineering controls:

The premises where the product is stored /manipulated must be adequately ventilated, cool and dry.
The use of the substance as fertilizer obey reasonable safety precautions and follow good personal hygiene and good working practice rules using appropriate personal protective equipment in accordance to the Directive 89/686/EEC and D.Lgs.475/92- UNI standards considering the exposure to splashes and/or splashing.

8.2.2 Personal protective equipment:

Eye/face protection:
protective googles (reference EN 166 standard) to prevent accidental contact depending on working situation.

Hand protection:
work gloves category II (reference EN 374 standard) by PVC, neoprene, nitrile or equivalent.
For the appropriate choice evaluate permeation, degradation, drilling time in relation to the specific work activity which determines the wear.

Skin protection:
work clothes with long sleeves and safety shoes for professional use of category II for the comprehensive protection of skin to prevent repeated or delayed contact with skin (Reference EN 344 standard).

Respiratory protection:
In case of exceeding the threshold value of substances in the product, referred to the effective exposure, wear a mask with filter type B or universal type (1,2 or 3) selected according to the limit concentration of use (reference EN 141 standard).

8.2.3. Environmental exposure controls:

Prevent the uncontrolled release to the environment.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Form:	Liquid
Colour:	Brownish
Odour:	characteristic
pH-value to 10% w/w solution:	6 - 7
Dry substance	50 % w/w
Density:	1,25 g/mL
Solubility in water (20°C in g/l):	Total
Organic Nitrogen content from amino acids and peptides	7,0% w/w
Ammonium Nitrogen content	0,4% w/w
Organic Carbon content:	23% w/w
Manganese content	0,1% w/w
Boron content:	0,05% w/w
Iron content:	0,2% w/w
Zinc content	0,01% w/w
Molybdenum content:	0,005% w/w
Cobalt content:	0,01% w/w

9.2 Other information
Available on request.

10. STABILITY AND REACTIVITY

10.1 Reactivity:
The product doesn't present hazards due to its reactivity.

10.2 Chemical stability:
The product is stable in the normal storage conditions.

10.3 Possibility of hazardous reactions:
No particular situations must be remarked.

10.4 Conditions to avoid:
Avoid thermal shocks for the possibility to cause crystallization and avoid storing at temperature >30° and < 4 °C for the difficult handling due to increased viscosity. With the passing of time, a slight sediment may be formed without prejudicing the quality of the product.

10.5 Incompatible materials:
Strong oxidizing agents due to the possibility to realize exothermic reactions.

10.6 Hazardous decomposition products:
None in the normal storage conditions.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Dangerous effects for health deriving from mixture expositions: see section 2 and 4.
Data referred to mixture are not available. The product is not classified according to classification criteria under Regulation 1272/2008/EC.

The toxicological information relative to the substances present in the mixture is reported herewith.

Amino acids and peptides mixture:
Not classified substance. Not dangerous substance.

Ferrous (II) sulfate:
Ferrous sulfate is harmful if swallowed and small swallowed quantities may cause important health disturbances (abdominal pain, nausea, vomiting, diarrhea). Ferrous sulfate may cause slight irritation of mucosa, upper respiratory tract, eyes and skin.
The exposition symptoms include burning sensation, cough, asthmatic breathing, laryngitis, shortness of breath, cephalea, abdominal pains, nausea and vomiting.

Acute toxicity:
Oral, rat: LD50 1520 mg/kg body weight referred to $FeSO_4 x7H_2O$.
Inhalation, rat: LC50 no deaths at the saturation limit with a solution 40% $FeCl_3$
Dermal, rat: LD50 > 881 mg/kg body weight referred to $FeCl_2$

Iron salts are harmful if swallowed, have limited evidence of effects resulting from inhalation and low potential for systemic toxicity by skin.

Corrosion, Skin irritation:
dermal, rabbit: not irritant with 25% $FeSO_4 x7H_2O$ solution
dermal, rabbit: severe erythema, mild edema and peeling skin with $FeSO_4 x7H_2O$

Serious eye damage /eye irritation:
eye, rabbit: mild redness and chemosis with 25% $FeSO_4 x7H_2O$ solution
eye, rabbit: irritation and transient inflammation with $FeSO_4$
dermal sensitization: Not sensitizing

Respiratory sensitization:
Data not available.

Germ cell mutagenicity:
in vitro: variable results with soluble iron salts
in vivo: negative results with soluble iron salts

Tests have variable outcomes in vitro, probably due to the mechanisms of protection from oxidative damage, not effective in in vitro systems.

Carcinogenicity:
No increase in the incidence of tumors in rats by ingestion of FeCl3 in drinking water for two years with dosage 110-115 mg Fe/kg body weight mg/kg/day.
Epidemiological investigations have not revealed risks of cancer in the human population for iron absorption from food and medicines.
No data is available on carcinogenic effects due to inhalation and skin contact but these are not expected.

Reproduction toxicity:
reproduction, rat: NOAEL=1000 mg/kg body weight/day FeSO4x7H2O
reproduction, rat: NOAEL=440 mg/kg body weight/day FeSO4
reproduction, rat: NOAEL=220 mg/kg body weight/day FeCl3
development, rat: NOAEL=1000 mg/kg body weight/day FeSO4x7H2O
In tests performed on rats at the reported doses, there were no toxic effects on reproduction and fetal development.

Specific Target Organ Toxicity (STOT)– Single Exposition:
Inhalation, men: NOAEC>0,02 mg/m^3 Fe

In tests performed on volunteers at the reported doses, there were no acute respiratory effects.

Specific Target Organ Toxicity (STOT) – Repeated Exposure:
oral, rat (M): NOAEL=57 mg Fe/kg body weight/day soluble Iron salts (as Fe)
oral, rat (F): NOAEL=65 mg Fe/kg body weight/day soluble Iron salts (as Fe)

In tests performed on rats at the reported doses, there were no effects from repeated exposure by oral item.
No information is available on the chronic effects through inhalation and skin contact but these are not expected.

Danger in case of aspiration:
No danger known.

Manganese sulfate:
Manganese sulfate may give noxious effects on human health. Manganese sulfate can produces functional disturbs or morphological changes by repeated or prolonged exposures by inhalation of a dose ≥ 0,25 mg/L , 6 h/day and by ingestion of a dose generally ≤ 50 mg/Kg body weight/day.

Serious damages in healthy terms by prolonged exposure. Symptoms can be sleepiness and weakness in the legs, fixed facial expression, mask-like face, emotional disturbances as uncontrolled laughter, spastic gait with tendency to fall. A high incidence of pneumonitis cases has been reported in workers exposed to dust and fumes of some manganese compounds.

STOT RE: STOT RE 2: may cause severe damage to the brain.
Other target organs: nerves, lungs.

Acute toxicity:
LD50 oral (rat): 2150 mg/kg;
LC50 inhalation (rat) > 4,45 mg/L

Irritation:
Causes serious damage to eyes. Irritant for nasal mucosa and upper respiratory tract. No irritant effect on the skin.

Sensitization: no known effect.

Cancerogenicity, mutagenicity and reproductive toxicity:
men exposed to manganese dust showed a decrease in fertility. Laboratory studies have been evidenced mutagen effects.

Boric acid:
Boric acid has a teratogenic effect on humans and damages the human fertility and has a toxic effect on the developing fetus.

LD50 (oral):	2660 mg/kg bw rat
LD50 (inhalation):	0,16 mg/l/4h rat
LD50 (dermal):	> 2000 mg/kg bw rabbit

Zinc sulfate:
Zinc sulfate is harmful. Zinc sulfate is highly irritant for eyes. The symptoms may include reddening, edema, pain and lachrymation. The inhalation may cause moderate irritation of upper respiratory tract. The exposition symptoms include burning sensation, cough, asthmatic breathing, laryngitis, shortness of breath, cephalea, nausea and vomiting. Zinc sulfate is harmful if swallowed. The ingestion of small quantities provokes health disturbances comprising abdominal pains with heartburn, nausea and vomiting.

Target organs:
There aren't experimental or epidemiological evidences for target organ specific toxicity (single exposition).

Acute toxicity:	LD50 (oral mouse) = 926 mg/kg bw (equivalent to 337 mg of Zinc/kg)
Dermal toxicity:	LD50 (dermal mouse) > 2000 mg/kg bw Not irritant for skin
Ocular toxicity:	highly irritating. Zinc sulfate is considered to cause severe ocular irritation.

Sensitization, cancerogenicity, mutagenicity and reproductive toxicity:
Non-sensitizing, non convertogenic, non-carcinogenic substance. There aren't experimental or epidemiological evidences to justify the classification of Zinc compounds as toxic for reproduction.

Diammonium molybdate:
Not classified substance. Not dangerous substance.

Acute toxicity:	LD50 3883 mg/kg bw (male/female rat)
Dermal toxicity:	LD50 > 2000 mg/kg bw (male/female rat)
Ocular toxicity:	Not irritant for eyes (rat)
Inhalation toxicity:	LC50 (mg/L/4h): > 2,08 mg/L (male/female rat)

Ammonium molybdate is not a skin sensitizing, mutagenic, carcinogenic. There aren't available reliable scientific data indicating adverse effects on reproduction and fertility.

Cobalt sulfate:
The ingestion, the contact, the inhalation of small quantities of Cobalt sulfate provokes health disturbances and sensibilization. Cobalt sulfate can cause cancer by inhalation, may impair fertility, is harmful if swallowed.
Cobalt sulfate may cause sensitization by inhalation and skin contact with the possible risk of irreversible effects.
Acute toxicity: LD50 424 mg/kg bw rat (as Cobalt sulfate)

12. ECOLOGICAL INFORMATION

Use the product according to good working practice (see sections 6, 7, 13, 14 and 15).

12.1 Toxicity

Data relative to toxicity obtained by performed tests on aquatic and/or terrestrial organisms relative to this product are not at disposal.
On the basis of the ingredients, the product is Aquatic Chronic category 4, may cause long lasting harmful effects to aquatic life according to classification criteria under Regulation 1272/2008/EC.
The following information is relative to the contained substances and to considerations of use conditions.

PNEC values are reported in section 8.

Amino acids and peptides mixture:
Considering the intrinsic characteristic of naturalness of the substances constituting the protein hydrolyzates and its peculiarities connected to their use in agriculture, negative effects on environment are only due to the uncontrolled dispersion. Amino acids are the constituents of the food of human beings and animals; Amino acids and peptides mixtures can be used for animal feed. Negative effects on the environment are excluded seeing the intrinsic characteristics of naturalness relative to amino acids and peptides.

Aquatic toxicity:
Reports regarding toxicity to fish, aquatic invertebrates, aquatic algae and cyanobacteria, microorganisms are not at disposal. These studies are scientifically unjustified for the characteristics of biological availability of amino acids and peptides.

Sediment toxicity:
Since the substance is readily biodegradable, it can be assumed that amino acids and peptides are biologically degraded within the STP process and/or in the surface water and a transfer to the sediment compartment is unlikely.

Terrestrial toxicity:
Reports regarding toxicity to terrestrial arthropods, soil microorganisms, birds are not at disposal. These studies are scientifically unjustified for the characteristics of biological availability of amino acids and peptides.

Ferrous sulfate:
Ferrous sulfate being soluble in water and acidic, is potentially hazardous in specific conditions. Ferrous sulfate is quickly converted to Iron oxides and hydroxides in normal environmental conditions that are well known components of soil.

Fish, orizias latipes: LC50 > 67 mg/L (96h) $FeSO_4 x7H_2O$ (as Fe)
Invertebrates, daphnia magna EC50 = 1 mg/L (48h) FeSO4x7H_2O (as soluble Fe)

Manganese sulfate:
Manganese sulfate is toxic for aquatic organism, may cause long term effects in the aquatic environment.

LC50/96h: 30mg/L (Mn) fish
EC50=30 mg/L Mytilus edulis 48h referred to Manganese sulfate monohydrate CAS 10034-96-5
EC50=5mg/L Alga Scenedesmus quadricauda 12d referred to Manganese sulfate

Boric acid:
No specific information at disposal.

Zinc sulfate:
Zinc sulfate is very toxic for aquatic organism, may cause long term effects in the aquatic environment.

EC50=1,82 mg Zn/L Ceriodaphnia dubia 48h for pH < 7
EC50=0,60 mg Zn/L Selenastrum capricornutum (Pseudokirchneriella subcapitata) 72h for pH > 7-8,5

Diammonium molybdate:
Diammonium molybdate is rapidly dissolved and it remains present as molybdate in normal environmental conditions.

Cobalt sulfate:
Not available data.

12.3 Bioaccumulative potential

Composition of the product and use modalities make microelements promptly usable by plants. Avoid the uncontrolled dispersion in the environment and follow the suggested dosages.

Amino acids and peptides mixture:
The degradation of protein hydrolyzates in soil produces aminoacids, re-usable by living beings in the protein synthesis and consequently metabolizable. They persist in the environment for a very short time without any tendency to bioaccumulation.

Ferrous sulfate:
Iron is naturally ubiquitous in the environment and essential for the physiology of living organisms.

Its absorption from food sources is regulated by invertebrates and vertebrates. Bioaccumulation tests
performed for different species, showed low bioconcentration factors.

Manganese sulfate:
Manganese is naturally ubiquitous in the environment and essential for the physiology of living organisms.
Specific information is not at disposal.

Boric acid:
No potential for bioaccumulation.

Zinc sulfate:
Zinc is naturally ubiquitous in the environment and essential for the physiology of living organisms.
Zinc is a natural essential, necessary for the optimal growing and development of living organisms. All living organisms have homeostatic mechanisms that regulate Zinc absorption/excretion and bioaccumulation and biomagnification are excluded.

Diammonium molybdate:
Molybdenum is homeostatically controlled in vertebrates. Molybdenum is not homeostatically controlled in terrestrial plants and invertebrates but doesn't concentrate in a significative way.
No experimental evidences for bioaccumulation and biomagnification.

Cobalt sulfate:
No available data.

12.4 Mobility in soil

The degradation of protein hydrolyzates in soil produces aminoacids, reusable in protein synthesis and so promptly metabolizable. The microelements carried by the product are fertilizing elements for soil. The product if present in copious quantities can pollute ground and surface water, it may cause temporarily alterations in the point of dispersion. It is necessary to prevent the dispersion of the concentrated product into ground and surface waters.

12.5 Results of PBT and vPvB assessment

Not applicable.

12.6 Other adverse effects

Considering the intrinsic characteristic of naturalness of the substances constituting the protein hydrolyzates and its peculiarities connected to their use in agriculture, negative effects on environment are only due to the uncontrolled dispersion in the environment. There are not negative

effects on environment if the product is used according to the suggested procedures and dosages.

13. DISPOSAL CONSIDERATIONS

The disposal of the product and the packaging must comply with the local and national legislation in force.

The product and the contaminated packaging must be handled with the same care used for the product.

14. TRANSPORT INFORMATION

The product must be transported according to national, European and international regulations for not hazardous substances.

14.1 UN number: Not applicable.

14.2 UN proper shipping name: Not applicable.

14.3 Transport hazard class: Not applicable.

14.4 Packing group: Not applicable.

14.5 Environmental hazards: Not applicable.

14.6 Special precautions for users:
Not subjected to particular regulations.

14.7 Transport in bulk according to Annex II of Marpol 73/78 and the IBC code:
Transport in bulk is not performed.

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance:

Regulation 1907/2006/EC (REACH)

Regulation 1272/2008/EC (CLP)

Regulation 790/2009/EC (amending, for the purposes of its adaptation to technical and scientific progress, ATP Regulation 1272/2008/EC)
Regulation 453/2010/EU

D.Lgs 81/2008 (consolidated text on the protection of health and safety in the workplace) and subsequent amendments and Directive 2009/161/EU

15.2 Chemical safety assessment
Not available

16. OTHER INFORMATION

16.1 Source of information:

Toxicological reports relative to SICIT 2000 S.p.A. products, Biolab, Vimodrone (MI), Italy
Valutazione della Biodegradabilità Aerobica, Biolab, Vimodrone (MI), Italy, June 12, 2008
Safety data sheet relative to ingredients.

World Health Organization, Concise International Chemical Assessment Document 63, Manganese and its compounds: Environmental Aspects, 2004 (revised 2005)

Ambient Water Quality Guidelines for Manganese, Overview report, Environment Management Act, British Columbia (CA), 2001 (updated 6 March 2011)

USEPA. Office of Prevention, Pesticides and Toxic Substances. Reregistration Eligibility Document (RED); Iron salts. EPA-738-93-002. February 1993.

Exemption of hydrolysed proteins from registration under the REACH Regulation, Joint Position Paper, Centro Reach S.r.l., Milan, Italy, September 2012
ECHA web site.

16.2 Extended text of hazard statements reported in section 2 and 3:

Repr. Cat. 2 Reproductive toxicity, category 2
Carc. Cat. 2 Carcinogenicity, category 2
Muta. Cat. 3, Mutagenicity, category 3
Acute Tox. 4: Acute toxicity, category 4

Eye Irrit. 2: Eye irritant, category 2
Eye dam.1: Eye damage, category 1

Skin Irrit. 2: Skin irritant, category 2
Skin. Sens. 1: Skin sensitization, category 1

Resp. Sens. 1: Respiratory sensitization, category 1
Carc. 1B: Carcinogenicity, category 2
Muta. 2: Germ cell mutagenicity, category 2

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Repr. 1B: Reproductive toxicity, category 1B

STOT RE 2: Specific Target Organ Toxicity, Repeated Exposure, Category 2

Aquatic acute 1: Hazardous to the aquatic environment, acute toxicity category 1
Aquatic chronic 1: Hazardous to the aquatic environment, chronic toxicity category 1
Aquatic chronic 2: Hazardous to the aquatic environment, chronic toxicity category 2
Aquatic chronic 4: Hazardous to the aquatic environment, chronic toxicity category 4

H302: Harmful if swallowed.
H315: Causes skin irritation.
H317: May cause an allergic skin reaction.
H318: Causes serious eye damage.
H319: Causes serious eye irritation.
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H341: Suspected of causing genetic defects.
H350i: May cause cancer by inhalation.
H360F: May damage fertility.
H360FD: May damage fertility. May damage the unborn child.
H373: May cause damage to organs through prolonged or repeated.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.
H411: Toxic to aquatic life with long lasting effects.
H413: May cause long lasting harmful effects to aquatic life.

16.3 Revisions

Safety data sheet rev 1 453/2010/EU dated 30/11/12: general revision in conformity to Regulation 453/2010/EC.

Safety data sheet rev 1.1 453/2010/EU dated 30/03/15: revision of sections 1, 2, 3, 5, 8, 11, 12, 15 and 16.

Safety data sheet rev 2.0 453/2010/EU dated 01/06/15: revision of sections 2.1, 2.3, 3.2, 8, 11, 12, 15 and 16.

16.4 Acronyms

ACGIH:	American Conference of Governmental Industrial Hygienists
CAS:	Chemical Abstract Service
CLP:	Classification, Labelling and Packaging
DNEL:	Derived no effect level
EC50:	Half maximal effective concentration
EC:	European Community
ECHA:	European Chemicals Agency
EEC:	European Economic Community
EINECS:	European Inventory of Existing Commercial Chemical Substances
EPA:	Environment Protection Authority
EU:	European Union

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GHS: Globally Harmonized System

HSE: Health and Safety Executive
IBC: International code for the construction and equipment of ships carrying dangerous chemicals in bulk
LC50: Lethal concentration 50% test population
LD50: Lethal dose 50% test population
MARPOL: International Convention for the Prevention of Pollution from Ships
NOAEC: No Observed Adverse Effect Concentration
NOAEL: No Observed Adverse Effect Level
NOEC: No Observed Effect Concentration
PBT: Persistent, bioaccumulative and toxic
PNEC: Predicted no effect concentration
REACH: Registration Evaluation Authorization and Restriction of Chemicals
STEL: Short-term exposure limit
TLV: Threshold limit value
TWA: Time Weighted Average
UN: United Nations
vPvB: Very persistent very bioaccumulative

16.5 Other information

The statements submitted in this safety data sheet are based on our current knowledge and experience, as accurate and complete as possible, but they are given in good faith and for information only. The information reported in this safety sheet is intended to give you advice about the safe handling of the product, for storage, processing, transport and disposal.

The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of further processing, the information reported in this safety data sheet is not necessarily valid for the new made-up material. The user must ensure that the information is appropriate and complete in the case of particular uses.

This product should be stored, handled and used in accordance with good hygiene practice and in accordance with legal regulations.
The data given here do not signify any warranty with regard to particular properties.
This safety data sheet replaces all previous versions/information.