Safety Data Sheet

(according to the last version of the Reg. (EC) 1907/2006 – art. 31)



MicroSap RESOLV

Safety Data Sheet dated 09/04/2024, version 2,

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Mixture identification: inorganic micronutrient fertilizer

Trade name: MicroSap RESOLV

UFI: QH00-Y0T8-N00D-MQ0Q

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use:

Fertilizer

1.3. Details of the supplier of the safety data sheet

Company:

NDG NATURAL DEVELOPMENT GROUP Srl

Via Quasimodo, 42 - 40013 Castel Maggiore (BO) - TEL / FAX: +39 0514121099

Competent person responsible for the safety data sheet:

e-mail: ndggroup@ndggroup.eu

1.4. Emergency telephone number

EUROPEAN EMERGENCY NUMBER h 24/24: 112

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

EC regulation criteria 1272/2008 (CLP)

 Warning, Acute Tox. 4, Harmful if ingested.

 Danger, Eye Dam. 1, Causes serious eye damage.

 Warning, Aquatic Acute 1, Very toxic to aquatic life.

 Warning, Aquatic Chronic 1, Very toxic to aquatic life with long lasting effects.

Adverse physicochemical, human health and environmental effects: No other hazards

2.2. Label elements

Hazard pictograms:



Danger

Hazard statements:

H302 Harmful if ingested.

H318 Causes serious eye damage.

H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements:

P273 Avoid release to the environment.

P280 Wear eye/face protection.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a doctor.

P391 Collect spillage.

P501 Dispose of contents/container in accordance with national regulations.

Special Provisions: None

Contains

zinc sulphate heptahydrate

copper sulphate pentahydrate

Special provisions according to Annex XVII of REACH and subsequent amendments: None

2.3. Other hazards

No PBT, vPvB or endocrine disruptor substances present in concentration ≥ 0.1%

Other Hazards: No other hazards

SECTION 3: Composition/information on ingredients

3.1. Substances: N.A.

3.2. Mixtures

Hazardous components within the meaning of the CLP regulation and related classification:

Qty	Name	Ident. Number	Classification
≥ 7.8% - < 9.6%	dicopper chloride trihydroxide	Index number: 029-017-00-1 CAS: 1332-65-6 EC: 215-572-9	3.1/4/Inhal Acute Tox. 4 H332 3.1/3/Oral Acute Tox. 3 H301 4.1/A1 Aquatic Acute 1 H400 M=10 4.1/C1 Aquatic Chronic 1 H410 M=10 Acute Toxicity Estimate: ATE - Oral 299 mg/kg bw ATE - Inhalation (Dust/mist) 2,83 mg/l
≥ 4,2% - < 5,2%	zinc sulphate heptahydrate	Index number: 030-006-00-9 CAS: 7446-19-7 EC: 231-793-3	3.3/1 Eye Dam. 1 H318 4.1/A1 Aquatic Acute 1 H400 4.1/C1 Aquatic Chronic 1 H410 3.1/4/Oral Acute Tox. 4 H302
≥ 7.2% - < 8.8%	copper sulphate pentahydrate	Index number: 029-023-00-4 CAS: 7758-99-8 EC: 231-847-6	3.1/4/Oral Acute Tox. 4 H302 3.3/1 Eye Dam. 1 H318 4.1/A1 Aquatic Acute 1 H400 M=10 4.1/C1 Aquatic Chronic 1 H410 M=10 Acute Toxicity Estimate: ATE - Oral 481 mg/kg bw

All the constituents of the mixture are in compliance with EC Regulation 1907/2006 and have been registered by the manufacturers / importers / only representatives when mandatory: the registration numbers will be available to the Authority within seven days of their request.
Other substances may be present exempt from registration as required by article 2 or because they are produced / imported in quantities less than one ton per year.

SECTION 4: First aid measures

4.1. Description of first aid measures

In case of skin contact:

Immediately take off all contaminated clothing.
Areas of the body that have - or are only even suspected of having - come into contact with the product must be rinsed immediately with plenty of running water and possibly with soap.
OBTAIN IMMEDIATE MEDICAL ATTENTION.
Wash thoroughly the body (shower or bath).
Remove contaminated clothing immediatley and dispose off safely.

In case of eyes contact:

After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an opthalmologist immediately.
Protect uninjured eye.

In case of Ingestion:

Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.

In case of Inhalation: Remove casualty to fresh air and keep warm and at rest.

4.2. Most important symptoms and effects, both acute and delayed: None

4.3. Indication of any immediate medical attention and special treatment needed

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Treatment: None

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Water. Carbon dioxide (CO2).
Extinguishing media which must not be used for safety reasons:
None in particular.

5.2. Special hazards arising from the substance or mixture

Do not inhale explosion and combustion gases.
Burning produces heavy smoke.

5.3. Advice for firefighters

Use suitable breathing apparatus .
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Move undamaged containers from immediate hazard area if it can be done safely.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non emergency personnel:
Wear personal protection equipment.
Remove persons to safety.
See protective measures under point 7 and 8.
For emergency responders: Wear personal protection equipment.

6.2. Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.
Retain contaminated washing water and dispose it.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.
Suitable material for taking up: absorbing material, organic, sand

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

6.4. Reference to other sections: See also section 8 and 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
See also section 8 for recommended protective equipment.
Advice on general occupational hygiene:
Contamined clothing should be changed before entering eating areas.
Do not eat or drink while working.

7.2. Conditions for safe storage, including any incompatibilities

Keep away from food, drink and feed.
Incompatible materials: None in particular.
Instructions as regards storage premises: Adequately ventilated premises.

7.3. Specific end use(s): None in particular

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No occupational exposure limit available

DNEL Exposure Limit Values

dicopper chloride trihydroxide - CAS: 1332-65-6

Worker Industry: 1 mg/m³ - Exposure: Inhalation - Frequency: Long Term, systemic effects
Worker Industry: 1 mg/m³ - Exposure: Inhalation - Frequency: Long Term, local effects

Worker Industry: 137 mg/Kg bw/day - Exposure: Dermic - Frequency: Long Term, systemic effects
Consumer: 41 µg/kg bw/day - Exposure: Oral - Frequency: Long Term, systemic effects
Consumer: 82 µg/kg bw/day - Exposure: Oral - Frequency: Short Term, systemic effects

copper sulphate pentahydrate - CAS: 7758-99-8
Worker Industry: 1 mg/m³ - Exposure: Inhalation - Frequency: Long Term, systemic effects
Worker Industry: 1 mg/m³ - Exposure: Inhalation - Frequency: Long Term, local effects
Worker Industry: 137 mg/Kg bw/day - Exposure: Dermic - Frequency: Long Term, systemic effects
Consumer: 41 µg/kg bw/day - Exposure: Oral - Frequency: Long Term, systemic effects
Consumer: 82 µg/kg bw/day - Exposure: Oral - Frequency: Short Term, systemic effects

PNEC Exposure Limit Values

dicopper chloride trihydroxide - CAS: 1332-65-6
Target: Marine water - Value: 5.2 µg/L
Target: Fresh Water - Value: 7.8 µg/L
Target: Freshwater sediments - Value: 87 mg/kg dw
Target: STP - Value: 230 µg/L
Target: Soil (agricultural) - Value: 65 mg/kg dw

zinc sulphate heptahydrate - CAS: 7446-19-7
(data referring to the anhydrous substance)
Target: Marine water - Value: 17.8 µg/L
Target: Freshwater sediments - Value: 362.7 mg/kg dw
Target: Soil (agricultural) - Value: 205.2 mg/kg dw
Target: Microorganisms in sewage treatments - Value: 246.9 µg/L
Target: Fresh Water - Value: 35.6 µg/L

copper sulphate pentahydrate - CAS: 7758-99-8
Target: Fresh Water - Value: 7.8 µg/L
Target: Marine water - Value: 5.2 µg/L
Target: Freshwater sediments - Value: 87 mg/kg
Target: Marine water sediments - Value: 676 mg/kg
Target: Soil (agricultural) - Value: 65 mg/kg

8.2. Exposure controls

Eye protection: Use close fitting safety goggles, don't use eye lens.

Protection for skin:
Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.

Protection for hands:
Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.

Respiratory protection: Not needed for normal use.

Thermal Hazards: None

Environmental exposure controls: None

Appropriate engineering controls: None

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Value	Method:	Notes
Physical state:	Liquid	--	--
Colour:	Not Relevant	--	--
Odour:	Typical	--	--
Melting point/freezing point:	Not Relevant	--	--

Boiling point or initial boiling point and boiling range:	Not Relevant	--	--
Flammability:	Non-flammable	--	--
Lower and upper explosion limit:	Not Relevant	--	--
Flash point:	Not Relevant	--	--
Auto-ignition temperature:	Not Relevant	--	--
Decomposition temperature:	N.A.	--	--
pH:	4	--	--
Kinematic viscosity:	Not Relevant	--	--
Solubility in water:	N.A.	--	--
Solubility in oil:	N.A.	--	--
Partition coefficient n-octanol/water (log value):	N.A.	--	--
Vapour pressure:	Not Relevant	--	--
Density and/or relative density:	1180 Kg/L	--	--
Relative vapour density:	Not Relevant	--	--
Particle characteristics:			
Particle size:	N.A.	--	--

9.2. Other information

Properties	**Value**	**Method:**	**Notes**
Miscibility:	completely miscible in water	--	--

SECTION 10: Stability and reactivity

10.1. Reactivity: Stable under normal conditions
10.2. Chemical stability: Stable under normal conditions
10.3. Possibility of hazardous reactions: None
10.4. Conditions to avoid: Stable under normal conditions.
10.5. Incompatible materials: None in particular.
10.6. Hazardous decomposition products: None.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008
Toxicological information of the product:
MicroSap RESOLV
a) acute toxicity
Not classified
Based on available data, the classification criteria are not met
b) skin corrosion/irritation
Not classified
Based on available data, the classification criteria are not met
c) serious eye damage/irritation
The product is classified: Eye Dam. 1 H318
d) respiratory or skin sensitisation
Not classified
Based on available data, the classification criteria are not met
e) germ cell mutagenicity
Not classified
Based on available data, the classification criteria are not met
f) carcinogenicity
Not classified
Based on available data, the classification criteria are not met
g) reproductive toxicity
Not classified
Based on available data, the classification criteria are not met
h) STOT-single exposure
Not classified

Based on available data, the classification criteria are not met

i) STOT-repeated exposure

Not classified

Based on available data, the classification criteria are not met

j) aspiration hazard

Not classified

Based on available data, the classification criteria are not met

Toxicological information of the main substances found in the product:

dicopper chloride trihydroxide - CAS: 1332-65-6

a) acute toxicity

ATE - Oral 299 mg/kg bw

ATE - Inhalation (Dust/mist) 2,83 mg/l

Test: LD50 - Route: Oral - Species: Mouse = 299 mg/kg bw

Test: LC50 - Route: Inhalation - Species: Female rat > 2.77 mg/l - Duration: 4h

k) repeated dose toxicity:

Test: NOAEL - Route: Inhalation - Species: Rat = 2 mg/m^3

Test: LOAEL - Route: Inhalation - Species: Rat = 200 µg/m^3

zinc sulphate heptahydrate - CAS: 7446-19-7

a) acute toxicity:

Test: LD50 - Route: Oral - Species: Rat = 920 mg/kg bw

c) serious eye damage/irritation:

(data referring to the anhydrous substance)

Eye Irritant - Species: Rabbit

copper sulphate pentahydrate - CAS: 7758-99-8

a) acute toxicity

ATE - Oral 481 mg/kg bw

Test: LD50 - Route: Oral - Species: Rat = 481 mg/kg bw

k) repeated dose toxicity:

(data referring to cuprous oxide)

Test: NOAEL - Route: Inhalation - Species: Rat ≥ 2 mg/m^3

Test: LOEL - Route: Inhalation - Species: Rat = 200 µg/m^3

11.2. Information on other hazards

Endocrine disrupting properties:

No endocrine disruptor substances present in concentration ≥ 0.1%

SECTION 12: Ecological information

12.1. Toxicity

Adopt good working practices, so that the product is not released into the environment.

MicroSap RESOLV

The product is classified: Aquatic Acute 1 - H400; Aquatic Chronic 1 - H410

dicopper chloride trihydroxide - CAS: 1332-65-6

c) Bacteria toxicity:

Endpoint: NOEC - Species: Microorganisms = 230 µg/L

zinc sulphate heptahydrate - CAS: 7446-19-7

(data referring to the anhydrous substance)

a) Aquatic acute toxicity:

Endpoint: NOEC - Species: Daphnia = 154 µg/L

Endpoint: NOEC - Species: Pseudokirchnerella subcapitata = 41 µg/L

b) Aquatic chronic toxicity:

Endpoint: NOEC - Species: Pseudokirchnerella subcapitata = 99 µg/L

Endpoint: NOEC - Species: Pseudokirchnerella subcapitata = 11 µg/L

c) Bacteria toxicity:

Endpoint: NOEC - Species: Microorganisms = 100 µg/L - Duration h: 4

copper sulphate pentahydrate - CAS: 7758-99-8

c) Bacteria toxicity:

Endpoint: EC10 - Species: Microorganisms = 230 µg/L - Duration h: 30 - 30 days

12.2. Persistence and degradability: N.A.

12.3. Bioaccumulative potential: N.A.
12.4. Mobility in soil: N.A.
12.5. Results of PBT and vPvB assessment
vPvB Substances: None - PBT Substances: None
12.6. Endocrine disrupting properties
No endocrine disruptor substances present in concentration ≥ 0.1%
12.7. Other adverse effects: None

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Recover, if possible. Send to authorised disposal plants or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

SECTION 14: Transport information



14.1. UN number or ID number

ADR-UN Number:	3082
IATA-UN Number:	3082
IMDG-UN Number:	3082

14.2. UN proper shipping name

ADR-Shipping Name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (ZINC SULFATE HEPTAHYDRATE)
IATA-Shipping Name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (ZINC SULFATE HEPTAHYDRATE)
IMDG-Shipping Name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (ZINC SULFATE HEPTAHYDRATE)

14.3. Transport hazard class(es)

ADR-Class:	9
ADR - Hazard identification number:	90
IATA-Class:	9
IATA-Label:	9
IMDG-Class:	9

14.4. Packing group

ADR-Packing Group:	III
IATA-Packing group:	III
IMDG-Packing group:	III

14.5. Environmental hazards

ADR-Enviromental Pollutant:	Yes
IMDG-Marine pollutant:	Marine Pollutant
IMDG-EmS:	F-A , S-F

14.6. Special precautions for user

ADR-Subsidiary hazards:	-
ADR-S.P.:	274 335 375 601
ADR-Transport category (Tunnel restriction code):	3 (-)
IATA-Passenger Aircraft:	964
IATA-Subsidiary hazards:	-
IATA-Cargo Aircraft:	964
IATA-S.P.:	A97 A158 A197
IATA-ERG:	9L
IMDG-Subsidiary hazards:	-

IMDG-Stowage and handling: Category A
IMDG-Segregation: -

14.7. Maritime transport in bulk according to IMO instruments: N.A.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Dir. 98/24/EC (Risks related to chemical agents at work)
Dir. 2000/39/EC (Occupational exposure limit values)
Regulation (EC) n. 1907/2006 (REACH) consolidated
Regulation (EC) n. 1272/2008 (CLP) consolidated

Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:

Restrictions related to the product:
Restriction 3
Restrictions related to the substances contained:
Restriction 75

Sanitary checks.
Workers exposed to this hazardous chemical agent must be subjected to health surveillance carried out in accordance with the provisions of art. 41 of Legislative Decree 81 of 9 April 2008 unless the risk to the safety and health of the worker has been assessed as irrelevant, in accordance with the provisions of art. 224 paragraph 2.
Where applicable, refer to the following regulatory provisions :
Regulation (EU) 2019/1148 (explosives precursors)
Directive 2012/18/EU (Seveso III)
Regulation (EC) nr 648/2004 (detergents).
Dir. 2004/42/EC (VOC directive)
Provisions related to directive EU 2012/18 (Seveso III):
Seveso III category according to Annex 1, part 1
Product belongs to category: E1

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for the mixture while those of the registered substances contained therein are available.

SECTION 16: Other information

Full text of phrases referred to in Section 3:
H332 Harmful if inhaled.
H301 Toxic if swallowed.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
H318 Causes serious eye damage.
H302 Harmful if swallowed.

Hazard class and hazard category	Code	Description
Acute Tox. 3	3.1/3/Oral	Acute toxicity (oral), Category 3
Acute Tox. 4	3.1/4/Inhal	Acute toxicity (inhalation), Category 4
Acute Tox. 4	3.1/4/Oral	Acute toxicity (oral), Category 4
Eye Dam. 1	3.3/1	Serious eye damage, Category 1
Aquatic Acute 1	4.1/A1	Acute aquatic hazard, category 1
Aquatic Chronic 1	4.1/C1	Chronic (long term) aquatic hazard, category 1

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Classification according to Reg. (EC) Nr. 1272/2008	Classification procedure
Eye Dam. 1, H318	Calculation method

Aquatic Acute 1, H400	Calculation method
Aquatic Chronic 1, H410	Calculation method

This document was prepared by a competent person who has received appropriate training.
Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
This MSDS cancels and replaces any preceding release.

ADR:	European Agreement concerning the International Carriage of Dangerous Goods by Road.
ATE:	Acute Toxicity Estimate
ATEmix:	Acute toxicity Estimate (Mixtures)
CAS:	Chemical Abstracts Service (division of the American Chemical Society).
CLP:	Classification, Labeling, Packaging.
DNEL:	Derived No Effect Level.
EINECS:	European Inventory of Existing Commercial Chemical Substances.
GefStoffVO:	Ordinance on Hazardous Substances, Germany.
GHS:	Globally Harmonized System of Classification and Labeling of Chemicals.
IATA:	International Air Transport Association.
IATA-DGR:	Dangerous Goods Regulation by the "International Air Transport Association" (IATA).
ICAO:	International Civil Aviation Organization.
ICAO-TI:	Technical Instructions by the "International Civil Aviation Organization" (ICAO).
IMDG:	International Maritime Code for Dangerous Goods.
INCI:	International Nomenclature of Cosmetic Ingredients.
KSt:	Explosion coefficient.
LC50:	Lethal concentration, for 50 percent of test population.
LD50:	Lethal dose, for 50 percent of test population.
PNEC:	Predicted No Effect Concentration.
RID:	Regulation Concerning the International Transport of Dangerous Goods by Rail.
STEL:	Short Term Exposure limit.
STOT:	Specific Target Organ Toxicity.
TLV:	Threshold Limiting Value.
TWA:	Time-weighted average
WGK:	German Water Hazard Class.