

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Name: Optiyield Spectrum
Address/Phone No. **Emerald Crop Science Ltd.**
 c/o Micromix Plant Health Ltd
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 Langar
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 United Kingdom
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Emergency Phone No. +00 44 7917 246873
Additional Information: Info@micromix.com

Use of Substance / Preparation: Agricultural/Horticultural use only.

2. HAZARDS IDENTIFICATION

EC Classification:

- Acute toxicity, Oral (Category 4)
- Skin irritation (Category 2)
- Eye irritation (Category 2)
- Acute aquatic toxicity (Category 1)
- Chronic aquatic toxicity (Category 1)
- Specific target organ toxicity - repeated exposure (Category 2)
- Chronic aquatic toxicity (Category 2)
- Reproductive toxicity (Category 2)
- Oxidising solids (category 3)

Classification According to Directive 67/548/EEC:

- Xn, Harmful
- Xi, Irritant
- N, Dangerous for the environment
- O, Oxidising

Hazard statement(s):

- H272 May intensify fire; oxidiser
- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318/ H319 Causes serious eye irritation
- H360 May damage fertility or unborn child

Revision: 1

Emerald Crop Science Ltd.

Date: 7/5/2015

H373

May cause damage to organs through prolonged or repeated exposure

H400/H410

Very toxic to aquatic life with long lasting effects

H411

Toxic to aquatic life with long lasting effects.

Precautionary Statement(s):

P201

Obtain special instruction before use

P202

Do Not handle until safety precautions have been read and understood

P220

Keep/Store away from combustible materials.

P273

Avoid release to the environment

P280

Wear protective gloves/ eye protection/ face protection.

P301 + P312 + P330

IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.

P305 + P351 + P338 IF IN EYES:

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

P308+P313

IF exposed or concerned: seek medical advice/attention

P391

Collect spillage

P501

Dispose of contents/ container to an approved waste disposal plant.

Hazard symbol(s):



R-phrases(s):

R22

Harmful if swallowed

R36/38

Irritating to eyes and skin

R41

Risk of serious damage to eyes

R48/20/22

Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed

R50/53

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R51/53

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

R60

May impair fertility

R61

May cause harm to unborn child

S-phrases(s):

S22

Do not breathe dust.

S24/S25

Avoid contact with skin and eyes

S26

In case of contact with eyes, rinse immediately with plenty

Revision: 1

Emerald Crop Science Ltd.

Date: 7/5/2015

S36/37/39

of water and seek medical advice.

S39

Wear suitable protective clothing, gloves and eye/face protection.

S46

Wear eye/face protection.

S60

If swallowed, seek medical advice immediately and show this container or label.

S61

This material and its container must be disposed of as hazardous waste

Avoid release to the environment. Refer to special instructions/ Safety data sheets.

Supplemental Hazard statements

none

Other Hazards

This substance/mixture contains no components to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

3. COMPOSITION/INFORMATION ON INGREDIENTS**Component**

| | Nominal concentration. |
|----------------------------------|------------------------|
| Cupric sulphate pentahydrate | |
| CAS-No. : 7758-99-8 | 4% |
| EC-No. : 231-847-6 | |
| Index-No. : 029-004-00-0 | |
| Zinc sulphate monohydrate | |
| CAS-No. : 7446-19-7 | 25% |
| EC-No. : 231-793-3 | |
| Index-No. : 030-006-00-9 | |
| Manganese sulphate monohydrate | |
| CAS-No. : 10034-96-5 | 6% |
| EC-No. : 232-089-9 | |
| Index-No. : 025-003-00-4 | |
| Disodium Octaborate tetrahydrate | |
| CAS-No. : 12280-03-4 | 2% |
| EC-No. : | |
| Index-No: | |
| Magnesium sulphate monohydrate | |
| CAS-No. : 14168-73-1 | 12% |
| EC-No. : 231-298-2 | |
| Index-No: - | |
| Potassium Nitrate | |
| CAS-No. : 7757-79-1 | 9% |
| EC-No. : 231-818-8 | |
| Index-No: - | |

Revision: 1

Emerald Crop Science Ltd.

Date: 7/5/2015

Ammonium dihydrogenphosphate

CAS-No. : 7722-76-1 21%
 EC-No. : 231-746-5
 Index-No: -

Potassium dihydrogen phosphate

CAS-No. : 7778-77-0 12%
 EC-No. : 231-913-4
 Index-No: -

Calcium Lignosulphonate

- - 4%

Citric Acid

CAS-No. : 4%
 EC-No. :
 Index-No:

Anti-caking agent

- - 1%

Hazardous ingredients according to Regulation (EC) No 1272/2008

Component

Classification

Cupric sulphate pentahydrate

CAS-No. : 7758-99-8 Acute Tox. 4; Skin Irrit. 2; Eye
 EC-No. : 231-847-6 Irrit. 2; Aquatic Acute 1;
 Index-No. : 029-004-00-0 Aquatic Chronic 1; H302,
 H315, H319, H410

Manganese sulphate monohydrate

CAS-No. : 10034-96-5 STOT RE 2; Aquatic Chronic
 EC-No. : 232-089-9 2; H373, H411
 Index-No. : 025-003-00-4

Hazardous ingredients according to Directive 1999/45/EC

Component

Classification

Cupric sulphate pentahydrate

CAS-No. : 7758-99-8 Xn, N, R22 - R36/38 - R50/53
 EC-No. : 231-847-6
 Index-No. : 029-004-00-0

Manganese sulphate monohydrate

CAS-No. : 10034-96-5 Xn, N, R48/20/22 - R51/53
 EC-No. : 232-089-9
 Index-No. : 025-003-00-4

Full list of R phrases in section 16

4. FIRST AID MEASURES

**General Advice**

Consult a physician. Show this safety data sheet to the doctor in attendance

Inhalation

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician

Skin Contact

Wash off with soap and plenty of water. Consult a physician.

Eye Contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

Ingestion

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Further Medical Information

Zinc oxide dust or fume can irritate the respiratory tract. Prolonged skin contact can produce a severe dermatitis called oxide pox. Exposure to high levels of dust or fume can cause metallic taste, marked thirst, coughing, fatigue, weakness, muscular pain, and nausea followed by fever and chills. Severe overexposure may result in bronchitis or pneumonia with a bluish tint to the skin., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific Hazards

Sulphur oxides, Copper oxides, Zinc/zinc oxides, Manganese/manganese oxides, Boron/boranes, Magnesium oxides, Nitrous oxides, Potassium oxides, Phosphorous oxides

Unsuitable Extinguishing Media**Fire Fighting Protective Equipment**

Wear self-contained breathing apparatus for firefighting if necessary.

Extinguishing method

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Avoid dust generation. Avoid breathing dust/fume/gas/mist/vapours/spray. Ensure adequate ventilation. For personal protection see section 8.

Environmental Exposure Controls

Do not allow to enter drains, sewers or watercourses. If substance has entered a watercourse or sewer or contaminated soil or vegetation, IMMEDIATELY advise police and water authority.

Cleaning Up Methods

Sweep up and shovel into waste drums or plastic bags. Ensure adequate

Revision: 1

Emerald Crop Science Ltd.

Date: 7/5/2015

ventilation. Wear appropriate personal protective equipment, avoid direct contact.

7. HANDLING AND STORAGE

HANDLING

Adequate ventilation must be used. Good hygiene practices and housekeeping measures, Wash hands before breaks and after work. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. For precautions see section 2.2.

STORAGE

Store in a cool/low-temperature, well-ventilated (dry) place.

Storage Temperature:

-

Storage Life:

Stable at ambient temperatures.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Agricultural use only.



Eye Protection

Safety spectacles.



Gloves

Plastic or synthetic rubber gloves.

Other

Contaminated clothing should be thoroughly cleaned.

| Component | CAS-No. | Value | Control parameters <input type="checkbox"/> | Basis |
|--|----------------|---|---|---|
| Manganese Sulfate Monohydrate <input type="checkbox"/> | 10034-96-5 | TWA | 0.5 mg/m ³ | UK. EH40 WEL - Workplace Exposure Limits <input type="checkbox"/> |
| | Remarks | Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used | | |
| Disodium Ocataborate tetrahydrate | 12280-03-4 | TWA | 5 mg/m ³ | UK. EH40 WEL - Workplace Exposure Limits |

9. PHYSICAL AND CHEMICAL PROPERTIES

Form Powder

Colour Brown

Revision: 1

Emerald Crop Science Ltd.

Date: 7/5/2015

| | |
|---------------------------------------|--------------------------|
| Odour | No data. |
| pH (Value) | 7.0-8.0 @ 1:100 dilution |
| Melting Point (°C) | No data. |
| Flash Point (°C) | No data. |
| Flammable Limits | No data. |
| Explosive Properties | No data. |
| Oxidising Properties | No data. |
| Vapour Pressure (Pascal) | No data. |
| Density (Kg/L) | No data. |
| Solubility (Water) | No data. |
| Solubility (Other) | No data. |
| Viscosity (mPa.s) | No data. |
| Vapour Density (Air=1) | No data. |
| Relative Evaporation Rate (Ether = 1) | No data. |

10. STABILITY AND REACTIVITY

Hazardous Reactions

Hazardous Decomposition Product(s) No data.

Conditions to avoid: Exposure to moisture,

Incompatible materials: Powdered metals, Anhydrous copper(II) sulfate, reacts violently with:, hydroxylamine, Magnesium, Strong oxidizing agents

11. TOXICOLOGICAL INFORMATION

None of these effects are likely to occur under normal conditions of use, provided exposure is maintained at or below the relevant occupational exposure limits.

Acute toxicity

Harmful: danger of serious damage to health by prolonged exposure if swallowed.

LD50 Oral - Rat - 482 mg/kg

(OECD Test Guideline 401)

Remarks: anhydrous

LD50 Dermal - Rat - > 2,000 mg/kg

Remarks: anhydrous

Skin corrosion/irritation

Irritating to skin.

Serious eye damage/eye irritation

Irritating to eyes.

Respiratory or skin sensitisation

Prolonged or repeated exposure may cause allergic reactions in certain sensitive individuals.

Germ cell mutagenicity:

Carcinogenicity - Mouse - Oral

Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Endocrine: Thyroid tumors

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity:

Reproductive toxicity - Mouse - male - Oral

Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility)

Specific target organ toxicity — single exposure:

Specific target organ toxicity — repeated exposure:

Aspiration hazard:

Effects and Symptoms:

Zinc oxide dust or fume can irritate the respiratory tract. Prolonged skin contact can produce a severe dermatitis called oxide pox. Exposure to high levels of dust or fume can cause metallic taste, marked thirst, coughing, fatigue, weakness, muscular pain, and nausea followed by fever and chills. Severe overexposure may result in bronchitis or pneumonia with a bluish tint to the skin. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Men exposed to manganese dusts showed a decrease in fertility. Chronic manganese poisoning primarily involves the central nervous system. Early symptoms include languor, sleepiness and weakness in the legs. A stolid mask-like appearance of the face, emotional disturbances such as uncontrollable laughter and a spastic gait with tendency to fall in walking are findings in more advanced cases. High incidence of pneumonia has been found in workers exposed to the dust or fume of some manganese compounds.

Prolonged or repeated inhalation may cause: Pneumonia

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to daphnia and other aquatic invertebrates:

- EC50 - Daphnia magna (Water flea) - 0.024 mg/l - 48 h

Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

Bioaccumulative potential

No data available

Mobility in soil

No data available

Revision: 1

Emerald Crop Science Ltd.

Date: 7/5/2015

Results of PBT and VPVB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Further Ecological information

Very toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

Contact supplier for specialised advice.

Regulatory information

Do not empty into drains, dispose of this material and its container at hazardous or special waste collection point.

Recommended:**Product**

Dispose of wastes in an approved waste disposal facility.

Contaminated packaging

Dispose of this container to hazardous or special waste collection point.

14. TRANSPORT INFORMATION**INTERNATIONAL TRANSPORT REGULATIONS**

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper sulphate pentahydrate)

UN No. 3077

UN Pack. Group iii

SEA

IMDG Class 9

IMDG EMS Marine pollutant: yes

UN Packing group Sea iii

AIR

ICAO/IATA Class 9

UN Packing group Air iii

EUROPEAN REGULATIONS: ROAD/RAIL

ADR/RID Class 9

ADR/RID Item No 3077

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc sulphate monohydrate)

UN No. 3077

UN Pack. Group iii

SEA

IMDG Class 9

IMDG EMS Marine pollutant: yes

UN Packing group Sea iii

AIR

ICAO/IATA Class 9
UN Packing group Air iii

EUROPEAN REGULATIONS: ROAD/RAIL

ADR/RID Class 9
ADR/RID Item No 3077

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Manganese Sulfate Monohydrate)

UN No. 3077
UN Pack. Group iii

SEA

IMDG Class 9
IMDG EMS Marine pollutant: yes
UN Packing group Sea iii

AIR

ICAO/IATA Class 9
UN Packing group Air iii

EUROPEAN REGULATIONS: ROAD/RAIL

ADR/RID Class 9
ADR/RID Item No 3077

Proper Shipping Name Potassium Nitrate
UN No. 1486

UN Pack. Group iii

SEA

IMDG Class 5.1
IMDG EMS Marine pollutant: no
UN Packing group Sea iii

AIR

ICAO/IATA Class 5.1
UN Packing group Air iii

EUROPEAN REGULATIONS: ROAD/RAIL

ADR/RID Class 5.1
ADR/RID Item No 1486

15. REGULATORY INFORMATION

This Safety Data sheet has been prepared in accordance with DIRECTIVE 67/548/EEC and CPL-REGULATON (EC) NO 1272/2008 and Annex II of EU Regulation (EC) No 453/2010 (REACH) Directive 98/24/EC and Directive 2000/39/EC

16. OTHER INFORMATION

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Micromix Plant Health Ltd gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Micromix Plant Health Ltd accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.

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