

SAFETY DATA SHEET

NoroTec AB

Date of Issue: April 28, 2020

Version no: 5.0

Replaces: February 22, 2016

NoroTec™ Universal

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

1.1 Product identifier

| | |
|----------------------|--------------------|
| PRODUCT NAME: | NoroTec™ Universal |
| Group Name | Fertilizers |

1.2 Relevant identified uses of the substance or preparation and uses advised against

| | |
|----------------------------------|--|
| Use of the product | Fertilizers for agricultural crops for foliar treatment. |
| Limited conditions of use | Not applicable |

1.3 Details of the supplier of the safety data sheet

| | |
|--------------------------------|-----------------------|
| Company | NoroTec AB |
| Address | Långebergavägen 40 |
| Zip Code / City or Town | SE-256 69 Helsingborg |
| Country | Sweden |
| Telephone | +46 411 406 60 |
| Contact person | Fredrik Olsheden |
| E-mail | mail@norotec.se |

1.4 Emergency telephone number

| | |
|-----------------------------------|--|
| Emergency telephone number | Call 112 – ask for Poisson Information Centre. |
|-----------------------------------|--|

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or preparation

Product definition: Mixture

Classification according to (EG) 1272/2008

Skin Irr. 2; H315

Eye Irr. 2; H319

Aquatic Acute 1; H400

Aquatic Chronic 1; H410

2.2 Label Information

Label elements according to (EG) 1272/2008

The mixture requires labelling.



Signal Word: Warning

Hazard Statement

| | |
|-------------|---|
| H315 | Causes skin irritation. |
| H319 | Causes serious eye irritation. |
| H410 | Very toxic to aquatic life with long lasting effects. |

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Precautionary statements

| | |
|-----------------------|--|
| P280 | Wear protective gloves/protective clothing/eye protection/face protection |
| P302+P352. | IF ON SKIN: Wash with plenty of soap and water. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P314 | Get medical advice/attention if you feel unwell |
| P273 | Avoid release to the environment |
| P391 | Collect spillage. |
| P501 | Dispose of contents/container to a licensed hazardous waste disposal contractor. |

Contains

| | |
|----|----|
| -- | -- |
|----|----|

2.3 Other hazards

| | |
|---|---|
| PBT / vPvB | The product contains no PBT or vPvB substances. |
| Other hazards which do not cause classification | The product contains the substance boric acid, which can damage the fertility and the unborn baby. Boric acid is an SVHC substance. However, this product contains < 5.5 weight-% boric acid and is therefore classified according to current classification rules as not reproduction toxic. |

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance (UVCB)

| No | Component/ ingredient name | EC-number | CAS- number | REACH registration number | Conc. (weight-%) | Classification CLP] |
|----|-------------------------------|-----------|------------------------|------------------------------|---------------------|--|
| 1 | Magnesium nitrate | 233-826-7 | 10377-60-3 | 01-2119491164-38-0000 | 50 - 65 | Ox. Sol. 2; H272 |
| 2 | Magnesium sulphate | 231-298-2 | 7487-88-9 | 01-2119486789-11-0000 | 20 - 30 | Not classified as dangerous |
| 3 | Potassium nitrate | 231-818-8 | 7757-79-1 | -- | 1 - 4 | Ox. Sol. 2; H272 |
| 4 | Manganese sulphate | 232-089-9 | 10034-96-5 | 01-2119456624-35-0000 | 1-5 | STOT Re. 2; 373 Aquatic Chronic 2, H411 |
| 5 | Copper nitrate | 221-838-5 | 3251-23-8 | 2119969290-34-0000 | 1-5 | Acute Tox. 4; H302 Aquatic Chronic 1; H410 |
| 6 | Zink nitrate | 231-943-8 | 231-943-8 7779-88-6 | 01-2119488498-16-000 | < 2 | Acute Tox. 4; H302 Eye Dam. 1; H318 Aquatic Chronic 1, H410 |
| 7 | Potassium hydroxide | 215-181-3 | 1310-58-3 | 01-2119487136-33-0000 | < 2 | Skin Corr. 1A; H314 Acute Tox. 4; H302 |
| 8 | Ferrous sulphate | 231-753-5 | 7782-63-0 | 01-2119513203-57-0000 | 1-5 | Acute Tox. 4; H302 Skin Irrit. 2; H315 Eye Irrit. 2; H319 |
| 9 | Boric acid | 233-139-2 | 10043-35-3 | 01-2119486683-25-0000 | 1-5 | Repr. 1B; H360FD |
| 10 | Citric acid | 201-069-1 | 77-92-9 | 01-2119457026-42-0000 | 2-4 | Eye Irrit. 2; H319 |
| 11 | Water | 231-791-2 | 7732-18-5 | -- | 40-65 | Not classified as dangerous |

Occupational exposure limits are mentioned under section 8, if such exist. See section 16 for the full text of the hazard statements declared above.

The product contains < 5,5 weight-% boric acid and is therefore not classified as toxic to reproduction.

The mixture exists as an aqueous solution, which makes the substances magnesium nitrate and potassium nitrate not exhibiting any oxidizing properties.

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4. FIRST AID

4.1 Description of first aid measures

| | |
|---------------------|---|
| Inhalation | Not relevant. |
| Skin contact | Remove contaminated clothing. Wash skin thoroughly with soap and water. |
| Eye contact | Hold eyelids apart. Rinse with a soft stream of water for 5 minutes. Consult a physician if irritation persists. |
| Ingestion | Rinse mouth with water. Drink a few glasses of water or milk. Contact physician if larger quantity has been consumed. |

4.2 Most important symptoms and effects, both acute and delayed

| | |
|---------------------|---|
| Inhalation | Not relevant. |
| Skin contact | Irritating to the skin. Repeated exposure causes dry skin, irritation, redness and skin cracking. |
| Eye contact | Causes serious eye irritation. Splashes may cause reversible irritation of the eye including burning and redness. |
| Ingestion | Ingestion of larger quantity can cause nausea and vomiting. |

4.3 Indication of any immediate medical attention and special treatment needed

| | |
|----------------------------|------------------------|
| Notes to physician | Treat symptomatically. |
| Specific treatments | No specific treatment. |

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

| | |
|---|---|
| General information | Non-flammable product. |
| 5.1.1 Suitable extinguishing media | The product is not flammable. Choose extinguishing agents based on the surrounding fire |
| 5.1.2 Unsuitable extinguishing media | None |

5.2 Special hazards arising from the substance or preparation

| | |
|--|--|
| Hazards from the substance or preparation | No fire or explosion risk exists. |
| Hazardous thermal decomposition products | Oxides of boron, phosphorus, potassium, copper, manganese, magnesium, zinc and sulfur. |

5.3 Advice to firefighters

| | |
|---|---|
| 5.3.1. Special protective actions for fire-fighters | Avoid inhalation of toxic fumes. |
| 5.3.2 Special protective equipment for fire-fighters | Fire-fighters should use chemically protective clothing and self-contained breathing apparatus. |
| 5.3.3 Further information | If possible, move the product from the fire area. Otherwise cool containers exposed to flames with water until fire is out. Do not allow run-off from firefighting to enter drains or water courses |

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Provide good ventilation. Keep people away from the site. Avoid contact with eyes and skin.

Wear appropriate personal protective equipment. For information on personal equipment, see section 8.

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6.1.1 For non-emergency personnel

Wear protective equipment as described under section 8.

6.1.2 For emergency responders

Small spills: Wear protective equipment described under section 8th

Larger spill: Use chemically protective clothing and breathing apparatus.

6.2 Environmental precautions

Avoid dispersal of spilt material in waterways and sewers or contaminate of soil and vegetation. If this is not possible immediately contact the police and relevant authorities.

6.3 Methods and materials for containment and cleaning up

Dike spills using vermiculite, sand or other inert absorbent material and place in sealable containers.

Clean up area with detergent and water subsequently. Collected material should be disposed of as hazardous waste. See section 13.

6.4 Reference to other sections

See section 8 for personal protective equipment.

See section 13 for handling of waste materials.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

| | |
|-----------------|--|
| Handling | Provide good ventilation. Avoid contact with skin and eyes Avoid breathing vapours/spray mist. Do not eat or drink while handling the product. Wash hands before breaks and after work |
|-----------------|--|

7.2 Conditions for safe storage, including any incompatibilities

| | |
|---------------------------|---|
| Storage conditions | Keep dry and cool in a well ventilated place. |
|---------------------------|---|

7.3 Special characteristics and risks

| | |
|----------------------------|--|
| Conditions to avoid | Keep away from strong alkaline solution and strong oxidizing agents. Protected against frost. Avoid direct sunlight. |
|----------------------------|--|

7.4 Specific end use(s)

| | |
|-------------------------|--------------|
| Specific use (s) | Fertilizers. |
|-------------------------|--------------|

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational Exposure Limit:

| Substance | CAS no. | Range | ppm | mg/m ³ | Country | Remarks |
|---------------------------------------|-----------|--------|-----|-------------------|---------|---------|
| Manganese sulphate (as manganese) | 7439-96-5 | 8 h | -- | 0,5 | UK | -- |
| Copper nitrate (as copper) | 7440-50-8 | 8 h | -- | 1,0 | UK | dm |
| Potassium hydroxide (respirable dust) | 1310-58-3 | 15 min | -- | 2,0 | UK | -- |

dm = As dusts and mists.

8.2 Exposure Control

Provide good ventilation. Avoid contact with skin and eyes. Do not eat, drink or smoke while working. Wash hands before breaks and after work.

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8.2.1 Appropriate technical controls

Not relevant for this product.

8.2.2 Individual protective measures, e.g. protective personal equipment.

| | |
|---------------------------------------|---|
| 8.2.2.1 Respiratory protection | Not normally needed. But at risk of inhalation use respirators (half mask with particle filter P2). |
| 8.2.2.2 Eye/face protection | Wear tight-fitting goggles or face shield. |
| 8.2.2.3 Hand protection | Use protective gloves made of neoprene or nitrile rubber. |
| 8.2.2.4 Body protection | Wear appropriate protective clothing. |
| 8.2.2.5 Thermal hazards | The product does not constitute a thermal hazard. No special measures required. |

8.2.2 Environmental exposure controls

Avoid release to the environment.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

| | |
|---|---------------------------------|
| Physical state | Liquid |
| Colour | Green brown |
| Odour | Practically odourless |
| Odour threshold | Not available |
| Solubility | Completely soluble in water. |
| pH (product) | About 1.3 |
| Melting point /freezing point | Not available |
| Initial boiling point and kitchen range | 100 °C. |
| Flash point | > 100°C |
| Evaporation rate | Not available |
| Flammable (solid, gas) | Not applicable |
| Burning time | Not applicable |
| Burning rate | Not applicable |
| Upper / lower flammability or explosive limits | Not explosive |
| Steam pressure | Not available |
| Vapour density | Not available |
| Relative density | 1.28 g/cm ³ at 20 °C |
| Partition coefficient octanol/water | Not applicable |
| Ignition temperature | Not relevant |
| Decomposition Temperature | Not available |

9.2 Other information

| | |
|------------|----------------|
| VOC | Not applicable |
|------------|----------------|

10. STABILITY AND REACTIVITY

| | |
|--|---|
| 10.1 Reactivity | Non-reactive. |
| 10.2 Chemical stability | Chemically stable under normal conditions of use and storage. |
| 10.3 Possibility of hazardous reactions | None |
| 10.4 Conditions to avoid | None |

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| | |
|--|--|
| 10.5 Incompatible materials | Strong alkaline solutions and strong oxidizing agents. |
| 10.6 Hazardous decomposition products | Thermal decomposition results in the formation of oxides of boron, phosphorus, potassium, copper, manganese, magnesium, zinc and sulfur. |

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

11.1 Acute toxicity

Not harmful by skin contact. Not harmful if inhaled. Not harmful if swallowed.

Acute toxicity of manganese sulphate

| Exposure route | Value/Unit | Species | Exp. time | Method/note |
|----------------|------------|---------|-----------|-------------|
| LD50, oral | 782 mg/kg | rat | -- | -- |

Acute toxicity of copper nitrate

| Exposure route | Value/Unit | Species | Exp. time | Method/note |
|----------------|------------|---------|-----------|-------------|
| LD50, oral | 950 mg/kg | rat | -- | -- |

Acute toxicity of zinc nitrate

| Exposure route | Value/Unit | Species | Exp. time | Method/note |
|------------------|---------------|---------|-----------|-------------|
| LD50, oral | 293 mg/kg | rat | -- | -- |
| LD50, dermal | > 2.000 mg/kg | rat | -- | -- |
| LC50, inhalation | 46-73 mg/l | rat | 4 h | -- |

Acute toxicity of the product

| Exposure route | Value/Unit | Species | Exp. time | Method/note |
|----------------|---------------|---------|-----------|----------------------|
| LD50, oral | > 2.000 mg/kg | rat | -- | ATE-mix (calculated) |
| LD50, dermal | > 2.000 mg/kg | rat | -- | ATE-mix (calculated) |

Irritation/Corrosion

Assessment of skin corrosion/irritation, classification:

Irritating to skin.

Assessment of eye damage or irritation, classification:

Causes serious eye irritation.

11.2 Potential acute effects

| | |
|---------------------|--|
| Inhalation | Not relevant. |
| Skin contact | Irritation by skin contact. Repeated exposure gives rise to dry skin, irritation, redness and skin cracking. |
| Eye contact | Splashes may cause reversible irritation of the eye including burning and redness. |
| Ingestion | Ingestion of larger quantity can cause nausea and vomiting. |

11.3 Sensitization by inhalation/skin contact

Assessment of sensibility for the product:

The product does not contain any sensitizing agents.

11.4.1 Germ cell mutagenicity

Assessment of mutagenicity for the product:

Based on available data, the classification criteria are not met.

11.4.2 Carcinogenicity

Assessment of carcinogenicity for the product:

Based on available data, the classification criteria are not met.

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11.4.3 Reproduction toxicity

Assessment of reproduction toxicity for the product:

The product is containing the substance boric acid, which can be damaging for fertility.

The product, however, contains < 5.5 weight.-% boric acid and is classified according to the current classification rules as not toxic to reproduction.

11.5.1 Specific target organ toxicity (single exposure)

STOT assessment single dos toxicity:

Shall not be classified as a specific target organ toxicant (single exposure).

11.5.2 Repeated dose toxicity and specific organ toxicity (repeated exposure)

STOT assessment of repeated dose toxicity:

Shall not be classified as a specific target organ toxicant (repeated exposure).

However, local effect such as dry skin, irritation, redness and skin cracking will occur.

11.7 Aspiration

Shall not be classified as presenting an aspiration hazard.

12. ECOLOGICAL INFORMATION

12.1. 1 Toxicity

Acute aquatic toxicity of manganese sulphate

| Test | Value / unit | Test Method | Exp. time | Species |
|--------------|--------------|-----------------|-----------|-------------------------|
| Fish LC50 | 30 mg/l | ECOTOX Database | 96 h | Fathead minnow |
| Daphnia EC50 | 8 mg/l | ECOTOX Database | 48 h | Daphnia magna |
| Algae ErC50 | 61 | ECHA Dossier | 72 h | Desmodesmus subspicatus |

Acute aquatic toxicity of copper nitrate

| Test | Value / unit | Test Method | Exp. time | Species |
|--------------|--------------|-------------|-----------|---------------|
| Fish C50 | 0,2 mg/l | IFA GESTIS | 96 h | Zebra danio |
| Daphnia EC50 | 0,07 mg/l | IFA GESTIS | 48 h | Daphnia magna |
| IC50 | 0,085 mg/l | -- | 14 days | Green algae |

Acute aquatic toxicity of zinc nitrate.

| Test | Value/unit | Test Method | Exp. time | Species |
|--------------|------------|--------------------|-----------|--------------------------------|
| Fish LC50 | 0.112 mg/l | ECHA | 96 h | -- |
| Daphnia EC50 | 0.155 | ECHA | 49 h | -- |
| Algae IC50 | 0,136 | OECD Guideline 201 | 72 timmar | Pseudokirchnerella subcapitata |

Zinc has moderate to high bioaccumulation in aquatic organisms but gives no biomagnification in the food chain.

Ecological toxicity

The product is very toxic to aquatic organisms.

12.2 Persistence and degradability

| | |
|---------------------------|---|
| Conclusion/Summary | The product containing elements such as boron, iron, copper, manganese, magnesium, zinc and sulphur. Elements are by definition not biodegradable |
|---------------------------|---|

12.3 Bioaccumulative potential

| | |
|---------------------------|---------------------------------|
| Conclusion/Summary | Bioaccumulation can be expected |
|---------------------------|---------------------------------|

12.4 Mobility in soil

The product is mobile in the soil profile due to its high water solubility.

Adsorption to solid soil particles is not expected.

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12.5 Results of PBT and vPvB assessment

The product contains no substances which are identified as a PBT or vBvP substance (substance that is persistent, bioaccumulative and toxic).

12.6 Other adverse effects

None known

12.7 Environmental information/conclusion

The mixture in concentrated form is classified as very toxic to aquatic life with long lasting effects. Solution ready for use that is spread on arable land is not considered dangerous for the environment. However, avoid spreading near lakes and rivers

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

| | |
|---------------------------|--|
| Method of disposal | Residues and waste are hazardous waste. Dispose of at an approved disposal facility. |
| Hazardous waste | Yes |

Packaging

| | |
|----------------------------|--|
| Method of disposal | Uncleaned empty packaging is hazardous waste. Dispose of at an approved disposal facility. |
| Hazardous waste | Yes |
| Special precautions | Not relevant |

European Waste Catalogue (EWC)

| | |
|-----------------------|--|
| EWC Waste Code | Type of waste |
| 02 01 08* | Agrochemical waste containing dangerous substances |
| 15 01 10* | Packaging containing residues of or contaminated by dangerous substances |

14. TRANSPORT INFORMATION

This product is classified as dangerous goods.

| | |
|------------------------------|---|
| UN-no: | 3082 |
| Proper Shipping Name: | Environmentally hazardous substance, liquid n.o.s. (copper nitrate/zinc nitrate/manganese sulphate) |

ADR / RID (Road / Rail Transport)

| | | | |
|-----------------------|----|---------------------------------|-----|
| Class: | 9 | Packing Group: | III |
| Label: | -- | Environmental hazards: | Yes |
| Hazard number: | 90 | Tunnel restriction code: | E |

IMDG (SEA)

| | | | |
|--------------------------|-----|-----------------------|----------|
| Class: | 9 | Packing Group: | III |
| Label: | -- | EmS: | F-A, S-F |
| Marine Pollutant: | Yes | | |

IATA (Air Transport)

| | | | |
|---------------|----|-------------------------------|-----|
| Class: | 9 | Packing Group: | III |
| Label: | -- | Environmental hazards: | Yes |

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14.7 Bulk transport in accordance with annex II of convention Marpol 73/78 and IBC-Code

Not covered by this legislation.

15. REGULATORY INFORMATION

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

Classification and labelling according to (EG) 1272/2008 is available under section 2. This Safety Data Sheet is prepared in accordance with Annex II of the REACH Regulation (EC) 1907/2006 and Regulation (EC) No. 453/2010 Appendix I.

| | |
|-----------------------------|---|
| Authorisation | Not required. |
| Restriction in use | None. |
| Other EU legislation | This product contains no ozone depleting substance and no persistent organic pollutant. |

15.2 Chemical Safety Assessment

Not relevant for products.

16. OTHER INFORMATION

THE PRODUCER'S NOTES

This safety data sheet is provided by MM-Support AB, Sweden, and approved by NoroTec AB, Sweden.

LIST OF HAZARD STATEMENTS MENTIONED UNDER SECTION 2 and 3

| No. | Text |
|--------|---|
| H272 | May intensify fire; oxidizer. |
| H302 | Harmful if swallowed. |
| H314 | Causes severe skin burns and eye damage. |
| H318 | Causes serious eye damage |
| H319 | Causes serious eye irritation. |
| H360FD | May damage fertility or the unborn child |
| H373 | May cause damage to organs through prolonged or repeated exposure by inhalation and ingestion |
| 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. |

Revision overview

| Version | Revision date | Responsible | Changes in section |
|---------|-------------------|---------------|--|
| v.2 | February 02, 2010 | Erland Jordow | -- |
| v.3 | December 12, 2014 | Bo Isacsson | The entire safety data sheet has been updated to REACH II format |
| v.4 | February 22, 2016 | Bo Isacsson | 2, 3, 4, 11, 13 and 15 |
| v.5 | May 28, 2020 | Bo Isacsson | 2, 4, 7, 8, 11 and 12 |