Date: 09.04.2021 Previous date: 16.02.2021

Trade name / substance name: ZMC-Grow

Version number: 4.0

SAFETY DATA SHEET

According to Regulation (EC) No. 1907/2006 (REACH), as amended by 2015/830/EU

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name / substance name	ZMC-Grow
CAS number	Not applicable. Mixture, not a substance.
EC number	Not applicable. Mixture, not a substance.
REACH Registration number	Not applicable. Mixture, not a substance.

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

Relevant identified uses	Fertilizer use
Uses advised against	None identified

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier	Tracegrow Oy
Street address	Teollisuustie 21
Country ID/Postcode/Place	FI-86710 Kärsämäki
Telephone number	+358 (0)44 984 2084
E-mail address of competent person responsible for the SDS	info@tracegrow.com

1.4 Emergency telephone number

Poison centre Finland (24 h/d): +358 (0)800 147 111 (free of charge) or +358 (0)9 471 977 (local network charge)
Emergency Action: In the event of a medical enquiry involving this product, please contact your doctor or local hospital accident and emergency department or the NHS enquiry service. See section 16.

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP):

Eye Dam. 1 H318	Causes serious eye damage.
STOT RE 2 H373	May cause damage to the brain through prolonged or repeated exposure via inhalation.
Aquatic Acute 1 H400	Very toxic to aquatic life.
Aquatic Chronic 2 H411	Toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP):

Eye Dam. 1 H318	Causes serious eye damage.
STOT RE 2 H373	May cause damage to the brain through prolonged or repeated exposure via inhalation.
Aquatic Acute 1 H400	Very toxic to aquatic life.
Aquatic Chronic 2 H411	Toxic to aquatic life with long lasting effects.

GHS05, GHS08, GHSO9
Signal word: Danger
Contains: Manganese sulphate, Zinc sulphate

Precautionary statement on prevention

P260	Do not breathe mist, vapours or spray.
P273	Avoid release to the environment.
P280	Wear protective gloves, protective clothing and eye protection.

Precautionary statement on emergency measures

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 POISON CENTER/doctor.

Precautionary statement on waste treatment

P501	Dispose of contents in accordance with national regulations.

2.3 Other hazards

The mixture does not contain PBT or vPvB substances (not applicable - inorganic substances). The mixture does not contain any substances with endocrine disrupting properties. The mixture does not contain SVHC-substances in concentrations at or above 0,1 % (w/w).

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Name of substance	CAS, EC or index number	Concentration
Not applicable. Mixture.	-	-

3.2 Mixtures				
Name of substance	**CAS, EC or index number**	**REACH registration number**	**Concentration**	**Classification according to Regulation (EC) No 1278/2008 (CLP)**
Water	7732-18-5 231-791-2	-	68,9 – 76,6 %	No hazard classification
Manganese sulphate	7785-87-7 232-089-9	No registration obligation in accordance with article 2(7(d)) of the REACH Regulation	10,8 – 13,5 %	Harmonized classification STOT RE 2 H373 Aquatic Chronic 2 H411
Zinc sulphate	7733-02-0 231-793-3	No registration obligation in accordance with article 2(7(d)) of the REACH Regulation	9,0 – 11,5 %	Harmonized classification Acute Tox. 4 H302 Eye Dam. 1 H318 Aquatic Acute 1 H400 (M-factor acute: 1) Aquatic Chronic 1 H410 (M-factor chronic: 1)
Copper sulphate	7758-98-7 231-847-6	01-2119520566-40-xxxx	3,6 – 6,1 %	Harmonized classification Acute Tox. 4 H302 Skin Irrit. 2 H315 Eye Irrit. 2 H319 Aquatic Acute 1 H400 (M-factor acute: 10) Aquatic Chronic 1 H410

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General Advice
Pay attention to self-protection. Move victim out of danger zone. In case of doubt or if symptoms persist, always call a doctor. If possible, show this SDS or the product label to the doctor.

Eye Contact
Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Cold water may be used. Protect the eye that is not injured. Seek medical attention.

Skin Contact
Immediately flush skin with plenty of water. Subsequently wash again with water and soap. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Seek medical attention.

Inhalation
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention.

Ingestion
Do NOT induce vomiting unless directed to do so by medical personnel. Rinse mouth immediately and drink large quantities of water. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed

Causes serious eye damage. May cause damage to the brain, cough, sore throat or shortness of breath through prolonged or repeated exposure via inhalation. May cause skin irritation. May cause nasal/respiratory tract irritation. May cause redness, pain or temporary loss of vision through prolonged or repeated exposure via the eyes. May cause redness through prolonged or repeated exposure via the skin. May cause abdominal pain, diarrhea, nausea or vomiting if repeatedly ingested.

4.3 Indication of any immediate medical attention and special treatment needed

Not known. Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

The mixture is not flammable under normal storage, handling and use conditions. Suitable extinguishing media: water spray jet, water mist, foam, carbon dioxide (CO2), extinguishing powder. Extinguishing media which must not be used for safety reasons: Full water jet.

5.2 Special hazards arising from the substance or mixture

The zinc sulphate in the mixture might give off toxic and irritant fumes when heated or during burning. In case of fire, sulphur dioxide (SO2), sulphur trioxide or zinc oxide may be liberated from the mixture.

5.3 Advice for firefighters

It is advisable to use protective clothing that meets at least the requirements of the standard EN469, as well as a self-contained (positive pressure if available) breathing apparatus. Extinguishing water or splash waters that have been in contact with the mixture should not be allowed into waterbodies or the sewage system untreated. If possible, such waters should be directed to, for example, a settling tank or be absorbed in order to avoid environmental exposure.

The mixture is not flammable. Keep away from other combustible materials. Keep away unprotected personnel.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment in case of a spill: tightly sealed safety glasses, protective clothing, a respirator, boots and protective gloves. Follow general good industrial hygiene and safety practices. Ensure adequate ventilation. Keep unauthorised people away.

6.2 Environmental precautions

Use sand or soil to contain spillages. Avoid release to the environment. The mixture should not be released into the sewage system, water bodies or soil. Cover drains, if necessary. If significant quantities of the product has entered water courses or the sewer, advise the local competent authority immediately.

6.3 Methods and material for containment and cleaning up

Collect any spillage with non-flammable, absorbent material, such as sand or soil. Use appropriate tools to collect the waste in a convenient disposal container, then remove to a safe place. Dispose of in accordance with local and regional regulations. Do not clean contaminated area with water. Do not let the product enter the environment. Cover drains, if necessary.

6.4 Reference to other sections

See Sections 8 (Exposure controls/personal protection) and 13 (Disposal considerations).

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Wear suitable protective clothing. In case of insufficient ventilation, wear respiratory equipment. Provide eye wash and sufficient washing facilities. Wash hands after use. Avoid eating or drinking while using the product. Keep away from food, drink and animal feedingstuffs. Never open the packages under pressure. Get medical advice/attention if you feel unwell. Avoid release to the environment.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed. Store container in a dry, well-ventilated area. Recommended storage temperature: +2 °C – +45 °C.

7.3 Specific end use

No specific end use.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational Exposure limit values

Commission Directive 2017/164/EU establishing a fourth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC, and amending Commission Directives 91/322/EEC, 2000/39/EC and 2009/161/EU:

Manganese and inorganic manganese compounds (as manganese)	0,2 mg/m³ (8 h; inhalable fraction) 0,05 mg/m³ (8 h; respirable fraction)

DNELs

DNELs not available for the mixture.

DNELs of the ingredients:

Route of exposure	DNELs for Manganese sulphate (CAS 7785-87-7)	
	Workers	**General Public**
Inhalation (long term)	0,2 mg/m³	0,043 mg/m³
Dermal (long term)	0,004 mg/kg bw/day	0,002 mg/kg bw/day

Route of exposure	DNELs for Zinc sulphate (CAS 7733-02-0)	
	Workers	**General Public**
Inhalation (long term)	1 mg/m³	1,25 mg/m³
Dermal (long term)	8,3 mg/kg bw/day	8,3 mg/kg bw/day
Oral (long term)	Not a relevant exposure route	0,83 mg/kg bw/day

Route of exposure	DNELs for Copper sulphate (CAS 7758-98-7)	
	Workers	**General Public**
Inhalation (long term)	1 mg/m³	No hazard identified
Dermal (long term)	137 mg/kg bw/day	No hazard identified
Oral (long term)	Not a relevant exposure route	0,041 mg/kg bw/day
Oral (acute)	Not a relevant exposure route	0,082 mg/kg bw/day
Eyes	Low hazard (no threshold derived)	Low hazard (no threshold derived)

PNECs
PNECs not available for the mixture.

PNECs of the ingredients:

Environmental protection target	PNECs for Manganese sulphate (CAS 7785-87-7)
Fresh water	0,013 mg/L
Marine water	0 mg/L
Sediment (freshwater)	0,011 mg/kg sediment dw
Sediment (marine water)	0,001 mg/kg sediment dw
Soil	25,1 mg/kg soil dw
Microorganisms in sewage treatment (STP)	56 mg/L

Environmental protection target	PNECs for Zinc sulphate (CAS 7733-02-0)
Fresh water	20,6 µg/L
Marine water	6,1 µg/L
Sediment (freshwater)	117,8 mg/kg sediment dw
Sediment (marine water)	56,5 mg/kg sediment dw
Soil	35,6 mg/kg soil dw
Microorganisms in sewage treatment (STP)	100 µg/L

Environmental protection target	PNECs for Copper sulphate (CAS 7758-98-7)
Fresh water	7,8 µg/L
Marine water	5,2 µg/L
Sediment (freshwater)	87 mg/kg sediment dw
Sediment (marine water)	676 mg/kg sediment dw
Soil	65 mg/kg soil dw
Microorganisms in sewage treatment (STP)	230 µg/L

8.2 Exposure controls

Engineering Controls

Ensure adequate ventilation.

Eye/face protection

Tightly sealed safety glasses.

Skin protection

Protective clothing and shoes.

Hand protection

Protective gloves. Suitable materials for gloves are natural rubber, natural latex, polychloroprenes, chloroprenerubber, nitrile rubber, butyl rubber, fluororubber or PVC. Breakthrough time to be greater than task duration. Textile or leather gloves are not suitable as protective gloves.

Respiratory protection

Wear a respirator especially if mist, vapours or spray can be formed.

Thermal hazards

Non-flammable. The zinc sulphate in the mixture might give off toxic and irritant fumes when heated or during burning. In case of fire, sulphur dioxide (SO2), sulphur trioxide or zinc oxide may be liberated from the mixture.

Environmental exposure controls

Very toxic to aquatic life with long lasting effects. The mixture should not be allowed into waterbodies or the sewage system. Collect spillage.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Light blue liquid
Odour	Odourless
Odour threshold	Not applicable
pH	3,0 – 4,0
Melting point	Not available
Initial boiling point and boiling range	Not available
Flash point	Not applicable
Evaporation rate	Not available
Flammability (solid, gas)	Liquid, not flammable
Upper/lower flammability or explosive limits	Not applicable
Vapour pressure	Not applicable
Vapour density	Not available
Relative density	1,36 – 1,40 (Water = 1)
Solubility	Easily soluble in cold water and hot water.
Partition coefficient: n-octanol/water	Not available
Auto-ignition temperature	Not applicable
Decomposition temperature	Not available
Viscosity	Not available
Explosive properties	Not available
Oxidising properties	Not available

9.2 Other information

No other information.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

The product is not reactive under normal environmental conditions or under normal operating conditions.

10.2 Chemical stability

The product is stable under normal environmental conditions and under normal operating conditions.

10.3 Possibility of hazardous reactions

None known.

10.4 Conditions to avoid

In case of warming: danger of bursting container. Thermal decomposition can lead to the escape of irritating gases and vapours.

10.5	Incompatible materials

None known.

10.6	Hazardous decomposition products

Not flammable. The zinc sulphate in the mixture might give off toxic and irritant fumes when heated or during burning. In case of fire, sulphur dioxide (SO2), sulphur trioxide or zinc oxide may be liberated from the mixture.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Based on the available information, the classification criteria are not met. Test results for the whole mixture are not available.

Skin corrosion/irritation

Based on the available information, the classification criteria are not met. Test results for the whole mixture are not available. May cause skin irritation.

Serious eye damage/irritation

The mixture is classified as damaging to the eye with the hazard statement Eye Dam. 1 H318: Causes serious eye damage.

Respiratory or skin sensitization

Based on the available information, the classification criteria are not met. Test results for the whole mixture are not available. May cause nasal/respiratory tract irritation.

Germ cell mutagenicity

Based on the available information, the classification criteria are not met. Test results for the whole mixture are not available.

Carcinogenicity

Based on the available information, the classification criteria are not met. Test results for the whole mixture are not available.

Reproductive toxicity

Based on the available information, the classification criteria are not met. Test results for the whole mixture are not available.

Specific target organ toxicity - single exposure

Based on the available information, the classification criteria are not met. Test results for the whole mixture are not available.

Specific target organ toxicity - repeated exposure

The mixture is classified with regard to specific target organ toxicity in repeated exposure, with the hazard classification STOT RE 2, H373: May cause damage to the brain through prolonged or repeated exposure via inhalation.

Aspiration hazard

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

Toxicological health effects

Ingestion:	May cause abdominal pain, diarrhea, nausea or vomiting if repeatedly ingested.
Skin:	May cause skin irritation. May cause redness through prolonged or repeated exposure via the skin.

Inhalation: May cause damage to the brain, cough, sore throat or shortness of breath through prolonged or repeated exposure via inhalation. May cause nasal/respiratory tract irritation.

Eyes: The mixture causes serious eye damage. May cause redness, pain or temporary loss of vision through prolonged or repeated exposure via the eyes.

11.2 Information on other hazards

No other information. The mixture does not contain any substances with endocrine disrupting properties.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

The mixture is classified as hazardous to the aquatic environment with the following hazard statements:

- Aquatic Acute 1 H400: Very toxic to aquatic life.
- Aquatic Chronic 2 H411: Toxic to aquatic life with long lasting effects.

12.2 Persistence and degradability

Information not available.

12.3 Bioaccumulative potential

Information not available.

12.4 Mobility in soil

Information not available.

12.5 Results of PBT and vPvB assessment

Not applicable (inorganic substances).

12.6 Endorcine disrupting properties

The mixture does not contain any substances with endocrine disrupting properties.

12.7 Other adverse effects

Not known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Unused mixture is to be handled as hazardous waste in accordance with national regulations. Waste should not be disposed of by releasing it into the sewage system. Avoid release to the environment. The empty packaging can be treated as ordinary waste.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

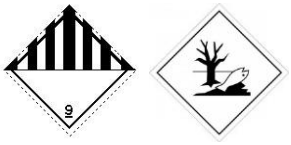
UN 3082

14.2 UN proper shipping name

ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (ZINC-MANGANESE-COPPER SULPHATE)

14.3 Transport hazard class

Class 9, Miscellaneous Dangerous Substances and Articles (M6: Pollutant to the aquatic environment, liquid)



14.4	Packing group
	III
14.5	**Environmental hazards**
	Environmentally hazardous substance (aquatic environment). Marine pollutant.
14.6	**Special precautions for user**
	No special precautions.
14.7	**Maritime transport in bulk according to IMO instruments**
	Annex II of Marpol is not applicable. The product is not transported in bulk tankers.

SECTION 15: REGULATORY INFORMATION

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

The following are known:

Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (the Seveso III directive):
- Manganese sulphate is a category E2 Seveso substance: Hazardous to the Aquatic Environment in Category Chronic 2.
- Zinc sulphate is a category E1 Seveso substance: Hazardous to the Aquatic Environment in Category Acute 1 or Chronic 1

REACH Regulation ((EC) N:o 1907/2006):
- The mixture does not contain SVHC substances in concentrations at or above 0,1 % (w/w).
- The substances manganese sulphate and zinc sulphate in the mixture are exempt from registration obligations in accordance with article 2(7(d)) of the REACH regulation.

15.2 Chemical Safety Assessment

No chemical safety assessment has been performed for the mixture.

SECTION 16: OTHER INFORMATION

Indication of changes

Version 4.0: Small modifications to sections 2.2 and 3.2. The pH of the mixture was updated. OEL value for manganese and its inorganic salts was included. The structure of SDS was updated and the required information of endocrine disrupting properties was included in 2.3, 11.2 and 12.6 according to new REACH requirements.

Abbreviations and acronyms

CLP	Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures
DNEL	Derived no-effect level
EC number	An identifier of substances commercially available within the European Union
PBT	Persistent, bioaccumulative and toxic
PNEC	Predicted no-effect concentration
REACH	Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
vPvB	Very persistent and very bioaccumulative

Key literature references and sources for data

REACH Registration dossiers of the substances, available at echa.europa.eu.

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

The hazard classification of the mixture is based on the classification methods and specific rules for the classification of mixtures as presented in the CLP Regulation ((EC) 1272/2008):

H318 – Summation method
H373 – Generic concentration limits
H302 – Acute toxicity estimates (ATE)
H400, H411 – Summation method weighted with M-factors

Relevant hazard and precautionary statements

Hazard statements

Acute Tox. 4 H302	Harmful if swallowed.
Skin Irrit. 2 H315	Causes skin irritation.
Eye Dam. 1 H318	Causes serious eye damage.
Eye Irrit. 2 H319	Causes serious eye irritation.
STOT RE 2 H373	May cause damage to the brain through prolonged or repeated exposure via inhalation.
Aquatic Acute 1 H400	Very toxic to aquatic life.
Aquatic Chronic 1 H410	Very toxic to aquatic life with long lasting effects.
Aquatic Chronic 2 H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

P260	Do not breathe mist, vapours or spray.
P273	Avoid release to the environment.
P280	Wear protective gloves, protective clothing and eye protection.
P314	Get medical advice/attention if you feel unwell.
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 POISON CENTER/doctor.
P501	Dispose of contents in accordance with national regulations.

Training advice

No specific training for workers. General good industrial hygiene and safety practices.

Emergency numbers

Belgium: 070 - 245 245
Austria: Poison Control Centre Emergency helpline +43 1 406 43 43, 112
Portugal: Em caso de intoxicacao, ligue +351 800 250 250
Czech Republic: Toxikologické informační středisko Telefon: +420 224 919 293, +420 224 915 402
Estonia: 112, 16662, ((+372) 626 93 90)
Lithuania: Visuomenės sveikatos centrams +370 5 236 20 52 arba +370 d687 53378
Italy: Centro antiveleni di Roma - Policlinico Umberto I tel. 06-49978000
Spain: Servicio de Información Toxicológica Teléfono: + 34 91 562 04 20 (solo emergencias toxicológicas)
Información en español (24h/365 días)
Sweden: 112, 08-331231 (vardagar kl 9-17)
United Kingdom: 999 (or 111 for non-emergency medical advice). Emergency Action: In the event of a medical enquiry involving this product, please contact your doctor or local hospital accident and emergency department or the NHS enquiry service)
Denmark: Kontakt Giftlinien på tlf.nr.: 82 12 12 12 (åbent 24 timer i døgnet). Germany:
Giftnotruf Berlin, Emergency telephone: +49 30 19240 (Tag und Nacht)
Finland: 0800 147 111/Myrkytystietokeskus tai suora numero 09-471977 Myrkytystietokeskus/HUS,
Tukholmankatu 17, 00029 HUS (Helsinki) 112

Norway: Giftinformasjonssentralen på tlf.nr.: 22 59 13 00, 113
France: ORFILA (INRS) : + 33 (0)1 45 42 59 59. 24 heures sur 24 et 7 jours sur 7
Hungary: Telefon: +36-80-20-11-99
Iceland: Neyðarlínan: Sími 112. Eitrunarmiðstöð Landsspítalans. Sími: 543 2222.
Netherlands: 30-2748888
Bulgaria: +359 2 9154 409
Greece: +30 10 779 3777
Ireland: +353 1 8379964
Latvia: +371 704 2468
Malta: 2425 0000
Poland: +48 58301 65 16 / +48 58 349 2831
Romania: +40 21 3183606
Slovakia: +421 2 54 77 4166
Slovenia: 112; + 386 41 650500

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