SAFETY DATA SHEET

Mineral Plus 100

Section 1. Identification

Product identifier : Mineral Plus 100

Product code : 122000018157

Other means of identification : 80404190; 90209870; 水产用复合预混合饲料Ⅱ（速补100）; Mineral Plus 100 1KG POWD 10 FG (Export); 速补 100 1KG 粉 袋 10 成品 (出口

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

Identified uses : animal feed

Uses advised against : None known.

Company Name : Elanco (Taiwan) Animal Health Co. Ltd.
Mingsheng E. Rd, Songshan Dist.
9F No 156, Sec.3
Taipei City, TW 10596

Telephone number : 886-2-27191115
fax: 886- 2-2719-1116

Emergency telephone number : CHEMTREC International: 00 1 703-527-3887 (24 hours)
CHEMTREC: +886 2 7741 4207 (Local)
CHEMTREC: 00801-49-1821 (Freephone)

Email : elanco_sds@elancoah.com

Section 2. Hazards identification

Classification of the substance or mixture : ACUTE TOXICITY (oral) - Category 5
SKIN CORROSION/IRRITATION - Category 3
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SKIN SENSITIZATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
AQUATIC TOXICITY (ACUTE) - Category 1
AQUATIC TOXICITY (CHRONIC) - Category 1

Percentage of the mixture consisting of ingredient(s) of unknown acute oral toxicity: 38.7%

Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 56.7%

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H303 - May be harmful if swallowed.
H316 - Causes mild skin irritation.
H317 - May cause an allergic skin reaction.
H318 - Causes serious eye damage.
H373 - May cause damage to organs through prolonged or repeated exposure.
H410 - Very toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention : P280 - Wear protective gloves. Wear eye or face protection.
P273 - Avoid release to the environment.
P260 - Do not breathe dust or mist.
P272 - Contaminated work clothing should not be allowed out of the workplace.

Section 2. Hazards identification

Response : P391 - Collect spillage.
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
P362 + P364 - Take off contaminated clothing and wash it before reuse.
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P333 + P313 - If skin irritation or rash occurs: Get medical advice or attention.
P305 + P351 + P338, P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

Storage : Not applicable.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Other hazards which do not result in classification : May form combustible dust concentrations in air.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Chinese name	% (w/w)	CAS number	Type
calcium bis(dihydrogenorthophosphate)	≥25 - ≤35	7758-23-8	[1]
sodium chloride	≥10 - ≤25	7647-14-5	[1]
magnesium sulphate	≥10 - ≤25	7487-88-9	[1]
zinc sulphate (anhydrous)	≤5	7733-02-0	[1]
manganese sulphate	≤4	7785-87-7	[1] [2]
iron sulfate	≤2.1	7720-78-7	[1]
potassium chloride	≤1.8	7447-40-7	[1]
copper sulphate	<1	7758-98-7	[1]
sodium selenite	<1	10102-18-8	[1] [2]

物品名稱	% (w/w)	化學文摘社登記號碼(CAS No.)	類型
calcium bis(dihydrogenorthophosphate)	≥25 - ≤35	7758-23-8	[1]
sodium chloride	≥10 - ≤25	7647-14-5	[1]
magnesium sulphate	≥10 - ≤25	7487-88-9	[1]
zinc sulphate (anhydrous)	≤5	7733-02-0	[1]
manganese sulphate	≤4	7785-87-7	[1] [2]
iron sulfate	≤2.1	7720-78-7	[1]
potassium chloride	≤1.8	7447-40-7	[1]
copper sulphate	<1	7758-98-7	[1]
sodium selenite	<1	10102-18-8	[1] [2]

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Type

[1] Substance classified with a health or environmental hazard
[2] Substance with a workplace exposure limit

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.

Skin contact : Causes mild skin irritation. May cause an allergic skin reaction.

Ingestion : May be harmful if swallowed.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Section 4. First aid measures

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical powder.

Unsuitable extinguishing media : Avoid high pressure media which could cause the formation of a potentially explosible dust-air mixture.

Specific hazards arising from the chemical : May form explosible dust-air mixture if dispersed. This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides
phosphorus oxides
halogenated compounds
metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

Small spill : Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Large spill : Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe dust. Do not ingest. Avoid release to the environment. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Prevent dust accumulation. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Electrical equipment and lighting should be protected to appropriate standards to prevent dust coming into contact with hot surfaces, sparks or other ignition sources. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Shelf life: Use entire contents on opening. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
manganese sulphate	**TW Minstry of Labor, labor permissible workplace exposure standards, allowable concentration (Taiwan, 3/2018). [manganese and its inorganic compounds (as Mn)]** CEIL: 5 mg/m³, (as Mn)
sodium selenite	**TW Minstry of Labor, labor permissible workplace exposure standards, allowable concentration (Taiwan, 3/2018). [Selenium compounds (as Se)]** STEL: 0.6 mg/m³, (as Se) 15 minutes. TWA: 0.2 mg/m³, (as Se) 8 hours.

Biological exposure indices

No exposure indices known.

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Eye protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state : Solid. [Powder.]

Color : Grayish-white.

Odor : Not available.

Odor threshold : Not available.

pH : Not available.

Melting point/freezing point : Not available.

Boiling point, initial boiling point, and boiling range : Not available.

Flash point : Not applicable.

Evaporation rate : Not available.

Flammability : Not available.

Lower and upper explosion limit/flammability limit : Not applicable.

Section 9. Physical and chemical properties and safety characteristics

Vapor pressure : Not available.

Relative vapor density : Not applicable.

Relative density : Not available.

Solubility(ies) : Not available.

Solubility in water : Not available.

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature : Not applicable.

Decomposition temperature : Not available.

Viscosity : Not applicable.

Flow time (ISO 2431) : Not available.

Particle characteristics

Median particle size : Not available.

Section 10. Stability and reactivity

Chemical stability : Shelf life: Use entire contents on opening.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Prevent dust accumulation.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
calcium bis (dihydrogenorthophosphate)	LD50 Oral	Rat	3986 mg/kg	-
sodium chloride	LC50 Inhalation Dusts and mists	Rat	>4200 mg/m³	1 hours
	LD50 Dermal	Rabbit	>10000 mg/kg	-
	LD50 Oral	Rat	3000 mg/kg	-
zinc sulphate (anhydrous)	LD50 Oral	Rat	1710 mg/kg	-
manganese sulphate	LD50 Oral	Rat	2150 mg/kg	-
iron sulfate	LD50 Oral	Rat	319 mg/kg	-
potassium chloride	LD50 Oral	Rat	2600 mg/kg	-
copper sulphate	LD50 Oral	Rat	300 mg/kg	-
sodium selenite	LD50 Oral	Rat	7 mg/kg	-

Irritation/Corrosion

Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
sodium chloride	Eyes - Moderate irritant	Rabbit	-	10 mg	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 100 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
zinc sulphate (anhydrous)	Eyes - Moderate irritant	Rabbit	-	420 ug	-
potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
manganese sulphate	Category 2	-	-

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.

Skin contact : Causes mild skin irritation. May cause an allergic skin reaction.

Ingestion : May be harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

Section 11. Toxicological information

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : May cause damage to organs through prolonged or repeated exposure. Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Mineral Plus 100	2600.8	N/A	N/A	N/A	N/A
calcium bis(dihydrogenorthophosphate)	3986	N/A	N/A	N/A	N/A
sodium chloride	3000	N/A	N/A	N/A	N/A
zinc sulphate (anhydrous)	1710	N/A	N/A	N/A	N/A
manganese sulphate	2150	N/A	N/A	N/A	N/A
iron sulfate	319	N/A	N/A	N/A	N/A
potassium chloride	2600	N/A	N/A	N/A	N/A
copper sulphate	300	N/A	N/A	N/A	N/A
sodium selenite	7	N/A	N/A	N/A	0.5

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
sodium chloride	Acute EC50 2430000 µg/l Fresh water	Algae - *Navicula seminulum*	96 hours
	Acute EC50 52.64 mg/dm3 Fresh water	Algae - *Scenedesmus quadricauda*	72 hours
	Acute EC50 519.6 mg/l Fresh water	Crustaceans - *Cypris subglobosa*	48 hours
	Acute EC50 402.6 mg/l Fresh water	Daphnia - *Daphnia magna*	48 hours
	Acute IC50 6.87 g/L Fresh water	Aquatic plants - *Lemna minor*	96 hours
	Acute LC50 1000000 µg/l Fresh water	Fish - *Morone saxatilis* - Larvae	96 hours
	Chronic LC10 781 mg/l Fresh water	Crustaceans - *Hyalella azteca* - Juvenile (Fledgling, Hatchling, Weanling)	3 weeks
	Chronic NOEC 6 g/L Fresh water	Aquatic plants - *Lemna minor*	96 hours
	Chronic NOEC 0.314 g/L Fresh water	Daphnia - *Daphnia pulex*	21 days
	Chronic NOEC 100 mg/l Fresh water	Fish - *Gambusia holbrooki* - Adult	8 weeks

Section 12. Ecological information

magnesium sulphate	Acute EC50 704 mg/l Fresh water	Crustaceans - *Cypris subglobosa*	48 hours
	Acute EC50 343.56 mg/l Fresh water	Daphnia - *Daphnia magna*	48 hours
	Acute IC50 1215 mg/l Fresh water	Algae - *Chlorella sp.*	72 hours
	Acute IC50 4.4 mg/l Fresh water	Aquatic plants - *Lemna aequinoctialis*	96 hours
	Acute LC50 40 mg/l Fresh water	Fish - *Mogurnda mogurnda* - Larvae	96 hours
	Chronic IC10 43 mg/l Fresh water	Algae - *Chlorella sp.*	72 hours
	Chronic IC10 1.9 mg/l Fresh water	Aquatic plants - *Lemna aequinoctialis*	96 hours
	Chronic NOEC 360 mg/l Fresh water	Daphnia - *Daphnia magna* - Neonate	3 weeks
zinc sulphate (anhydrous)	Acute EC50 724.4 µg/l Fresh water	Algae - *Stichococcus bacillaris*	72 hours
	Acute EC50 202 µg/l Marine water	Algae - *Ulva fasciata* - Zoea	96 hours
	Acute LC50 4 µg/l Marine water	Crustaceans - *Temora stylifera* - Adult	48 hours
	Acute LC50 21.8 µg/l Fresh water	Daphnia - *Daphnia magna* - Neonate	48 hours
	Acute LC50 2.36 µg/l Fresh water	Fish - *Cirrhinus mrigala*	96 hours
	Chronic EC10 10 µg/l	Daphnia - *Daphnia magna* - Juvenile (Fledgling, Hatchling, Weanling)	21 days
	Chronic NOEC 142.5 µg/l Marine water	Algae - *Ulva fasciata* - Zoea	96 hours
	Chronic NOEC 0.065 mg/l	Crustaceans	7 days
	Chronic NOEC 26 µg/l Fresh water	Fish - *Jordanella floridae*	100 days
manganese sulphate	Acute EC50 25700 µg/l Marine water	Algae - *Phaeodactylum tricornutum*	96 hours
	Acute EC50 8.28 mg/l Fresh water	Daphnia - *Daphnia magna*	48 hours
	Acute LC50 0.15 mg/l Fresh water	Crustaceans - *Canthocamptus sp.* - Larvae	48 hours
	Acute LC50 3.32 mg/l Fresh water	Fish - *Oncorhynchus mykiss* - Embryo	96 hours
	Chronic NOEC 2.3 mg/l Fresh water	Fish - *Tilapia guineensis* - Fingerling	28 days
iron sulfate	Acute EC50 143000 µg/l Fresh water	Crustaceans - *Crangonyx pseudogracilis* - Adult	48 hours
	Acute EC50 7.2 mg/l Fresh water	Daphnia - *Daphnia magna*	48 hours
	Acute LC50 410 µg/l Fresh water	Fish - *Salvelinus fontinalis*	96 hours
	Chronic NOEC 10.045 ppm Fresh water	Fish - *Oreochromis mossambicus*	90 days
potassium chloride	Acute EC50 9.24 g/L Fresh water	Algae - *Desmodesmus subspicatus*	72 hours
	Acute EC50 1337000 µg/l Fresh water	Algae - *Navicula seminulum*	96 hours
	Acute LC50 93000 µg/l Fresh water	Daphnia - *Daphnia magna*	48 hours
	Acute LC50 509.65 mg/l Fresh water	Fish - *Danio rerio*	96 hours
copper sulphate	Acute EC50 0.4 µg/l Marine water	Algae - *Isochrysis galbana*	72 hours
	Acute EC50 16.2 µg/l Fresh water	Aquatic plants - *Lemna aequinoctialis*	96 hours
	Acute EC50 1.4 µg/l Fresh water	Crustaceans - *Bosmina longirostris* - Neonate	48 hours
	Acute LC50 0.01 ng/ml Fresh water	Daphnia - *Daphnia magna* - Neonate	48 hours
	Acute LC50 0.057 µg/l Fresh water	Fish - *Cirrhinus mrigala*	96 hours
	Chronic NOEC 0.0003 mg/l Marine water	Algae - *Entomoneis punctulata* - Exponential growth phase	72 hours
	Chronic NOEC 0.0018 mg/l Fresh water	Aquatic plants - *Lemna minor*	96 hours
	Chronic NOEC 5.06 µg/l Marine water	Crustaceans - *Moina mongolica* - Neonate	21 days
	Chronic NOEC 10 µg/l Fresh water	Daphnia - *Daphnia magna* - Instar	21 days
	Chronic NOEC 0.46 µg/l Fresh water	Fish - *Acipenser transmontanus* - Larvae	53 days
sodium selenite	Acute EC50 26500 µg/l Fresh water	Algae - *Hymenomonas elongata*	96 hours
	Acute EC50 80 µg/l Fresh water	Algae - *Scenedesmus acutus*	3 days

Section 12. Ecological information

		var. acutus	
	Acute LC50 350 µg/l Fresh water	Crustaceans - *Ceriodaphnia affinis*	48 hours
	Acute LC50 0.006 mg/l Fresh water	Daphnia - *Daphnia pulicaria*	48 hours
	Acute LC50 0.29 ppm Marine water	Fish - *Zosterisessor ophiocephalus* - Adult	96 hours
	Chronic NOEC 1 mg/l Marine water	Algae - *Dunaliella salina* - Exponential growth phase	4 days
	Chronic NOEC 0.24 mg/l Fresh water	Daphnia - *Daphnia magna*	21 days
	Chronic NOEC 3.936 ng/ml Fresh water	Fish - *Oryzias latipes* - Juvenile (Fledgling, Hatchling, Weanling)	210 days

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
potassium chloride	-	-	Readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
zinc sulphate (anhydrous)	-0.07	60960	High
iron sulfate	-	20	Low
sodium selenite	-	5.8	Low

Mobility in soil

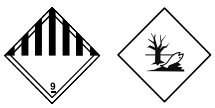
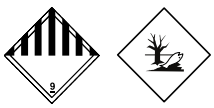
Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	UN	IMDG	IATA
UN number	UN3077	UN3077	UN3077
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (magnesium sulphate, ZINC SULFATE)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (magnesium sulphate, ZINC SULFATE)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (magnesium sulphate, ZINC SULFATE)
Transport hazard class(es)	9 	9 	9 
Packing group	III	III	III
Environmental hazards	Yes.	Yes.	Yes.

Additional information

Section 14. Transport information

UN : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

IMDG : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

IATA : This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

Not applicable.

TCCSCA List of concerned chemicals

Not applicable.

List of chemicals for which manufacturing or handling is defined as "work specially hazardous to health" : This product contains substances "Specially hazardous to health": manganese sulphate.

OSHA Article 29 : None of the components are listed.

OSHA Article 30 : None of the components are listed.

Standards for hazard prevention for specific chemical hazards

Ingredient name	Name on list	Status
manganese sulphate	Manganese and its compounds (Except manganese monoxide, manganese trioxide)	Class C (3rd)

Priority management chemicals, Article 2

CMR chemical substances, category 1 (Article 2.2 (I)) : Applicable

Regulation Governing Designation and Handling Permission of Controlled Chemicals : Not applicable

Inventory list

Taiwan All components are listed or exempted.

Section 16. Other information

Procedure used to derive the classification

Classification	Justification
ACUTE TOXICITY (oral) - Category 5	Calculation method
SKIN CORROSION/IRRITATION - Category 3	Calculation method
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1	Calculation method
SKIN SENSITIZATION - Category 1	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2	Calculation method
AQUATIC TOXICITY (ACUTE) - Category 1	Calculation method
AQUATIC TOXICITY (CHRONIC) - Category 1	Calculation method

References : Not available.

Person who prepared the SDS : Validated by Jacob Litschewski on 3/28/2024.

History

Section 16. Other information

Date of previous issue : No previous validation

Version : 0.01

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
SGG = Segregation Group
UN = United Nations

Indicates information that has changed from previously issued version.

Notice to reader

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