**Ballance Agri-Nutrients** 

Chemwatch: 5228-79 Version No: 2.1.1.1 Safety Data Sheet according to HSNO Regulations Chemwatch Hazard Alert Code: 3

Issue Date: **30/11/2016** Print Date: **01/11/2018** S.GHS.NZL.EN

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

Specialty lawn fertilizer containing iron sulphate for moss control.

### **Product Identifier**

Product name	Lawn Mix with Moss Killer (FE)	
Synonyms	Not Available	
Other means of identification	Not Available	
Relevant identified uses of the substance or mixture and uses advised against		

## Details of the supplier of the safety data sheet

Relevant identified uses

Registered company name	Ballance Agri-Nutrients
Address	Hewletts Road Mount Maunganui New Zealand
Telephone	+64 7 572 7900
Fax	+64 7 575 6233
Website	Not Available
Email	Not Available

### Emergency telephone number

Association / Organisation	Not Available
Emergency telephone numbers	0800 2436 2255
Other emergency telephone numbers	Not Available

### **SECTION 2 HAZARDS IDENTIFICATION**

#### Classification of the substance or mixture

Considered a Hazardous Substance according to the criteria of the New Zealand Hazardous Substances New Organisms legislation. Not regulated for transport of Dangerous Goods.

#### CHEMWATCH HAZARD RATINGS

	Min	Max	
Flammability	0		1
Toxicity	2		0 = Minimum
Body Contact	3		1 = Low
Reactivity	0		3 = High
Chronic	0		4 = Extreme

Classification <sup>[1]</sup>	Acute Toxicity (Oral) Category 4, Acute Toxicity (Inhalation) Category 5, Skin Corrosion/Irritation Category 2, Serious Eye Damage Category 1, Specific target organ toxicity - single exposure Category 3 (respiratory tract irritation), Acute Aquatic Hazard Category 3	
Legend:	1. Classified by Chemwatch; 2. Classification drawn from CCID EPA NZ; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI	
Determined by Chemwatch using GHS/HSNO criteria	6.1D (oral), 6.1E (inhalation), 6.1E (respiratory), 6.3A, 8.3A, 9.1D	

#### Label elements

pictogram(s)	

SIGNAL WORD DANGER

### Hazard statement(s)

Hazard

H302	Harmful if swallowed.
H333	May be harmful if inhaled.
H315	Causes skin irritation.
H318	Causes serious eye damage.

H335	May cause respiratory irritation.	
H402	Harmful to aquatic life.	
Precautionary statement(s) Prevention		
P271	Use only outdoors or in a well-ventilated area.	
P280	Wear protective gloves/protective clothing/eye protection/face protection.	
P261	Avoid breathing dust/fumes.	
P270	Do not eat, drink or smoke when using this product.	
P273	Avoid release to the environment.	

## Precautionary statement(s) Response

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/physician/first aider.	
P304+P312	IF INHALED: Call a POISON CENTER/doctor/physician/first aider/if you feel unwell.	
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider/if you feel unwell.	
P302+P352	IF ON SKIN: Wash with plenty of water and soap.	
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.	
P330	Rinse mouth.	
P332+P313	P332+P313 If skin irritation occurs: Get medical advice/attention.	
P362+P364	362+P364 Take off contaminated clothing and wash it before reuse.	

## Precautionary statement(s) Storage

P405	Store locked up.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.

### Precautionary statement(s) Disposal

posal

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

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

#### Substances

See section below for composition of Mixtures

### Mixtures

CAS No	%[weight]	Name
7783-20-2	25-35	ammonium sulfate
7778-18-9	10-20	calcium sulfate
10028-22-5	10-20	ferric sulfate, monohydrate
7758-23-8	10-15	calcium phosphate, monobasic
12135-86-3	10-15	antigorite
7447-40-7	5-15	potassium chloride
	balance	Ingredients determined not to be hazardous

## SECTION 4 FIRST AID MEASURES

### Description of first aid measures

Eye Contact	<ul> <li>If this product comes in contact with the eyes:</li> <li>Immediately hold eyelids apart and flush the eye continuously with running water.</li> <li>Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.</li> <li>Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.</li> <li>Transport to hospital or doctor without delay.</li> <li>Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul>
Skin Contact	<ul> <li>If skin contact occurs:</li> <li>Immediately remove all contaminated clothing, including footwear.</li> <li>Flush skin and hair with running water (and soap if available).</li> <li>Seek medical attention in event of irritation.</li> </ul>
Inhalation	<ul> <li>If fumes or combustion products are inhaled remove from contaminated area.</li> <li>Lay patient down. Keep warm and rested.</li> <li>Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.</li> <li>Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.</li> <li>Transport to hospital, or doctor, without delay.</li> </ul>
Ingestion	<ul> <li>IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.</li> <li>For advice, contact a Poisons Information Centre or a doctor.</li> <li>Urgent hospital treatment is likely to be needed.</li> <li>In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the</li> </ul>

patient's condition.
 If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the SDS should be provided. Further action will be the responsibility of the medical specialist.
 If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the SDS.
 Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:

 INDUCE vomiting with fingers down the back of the throat, ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

 NOTE: Wear a protective glove when inducing vomiting by mechanical means.

#### Indication of any immediate medical attention and special treatment needed

for phosphate salts intoxication:

- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.
- Ingestion of large quantities of phosphate salts (over 1.0 grams for an adult) may cause an osmotic catharsis resulting in diarrhoea and probable abdominal cramps. Larger doses such as 4-8 grams will almost certainly cause these effects in everyone. In healthy individuals most of the ingested salt will be excreted in the faeces with the diarrhoea and, thus, not cause any systemic toxicity. Doses greater than 10 grams hypothetically may cause systemic toxicity.
- Treatment should take into consideration both anionic and cation portion of the molecule.
- All phosphate salts, except calcium salts, have a hypothetical risk of hypocalcaemia, so calcium levels should be monitored.

#### Treat symptomatically.

For acute or short term repeated exposures to iron and its derivatives:

- Always treat symptoms rather than history.
- In general, however, toxic doses exceed 20 mg/kg of ingested material (as elemental iron) with lethal doses exceeding 180 mg/kg.
- Control of iron stores depend on variation in absorption rather than excretion. Absorption occurs through aspiration, ingestion and burned skin.
- + Hepatic damage may progress to failure with hypoprothrombinaemia and hypoglycaemia. Hepatorenal syndrome may occur.
- F Iron intoxication may also result in decreased cardiac output and increased cardiac pooling which subsequently produces hypotension.
- Serum iron should be analysed in symptomatic patients. Serum iron levels (2-4 hrs post-ingestion) greater that 100 ug/dL indicate poisoning with levels, in excess of 350 ug/dL, being potentially serious. Emesis or lavage (for obtunded patients with no gag reflex)are the usual means of decontamination.
- Activated charcoal does not effectively bind iron.
- Catharsis (using sodium sulfate or magnesium sulfate) may only be used if the patient already has diarrhoea.
- Deferoxamine is a specific chelator of ferric (3+) iron and is currently the antidote of choice. It should be administered parenterally. [Ellenhorn and Barceloux: Medical Toxicology]

#### SECTION 5 FIREFIGHTING MEASURES

#### Extinguishing media

- There is no restriction on the type of extinguisher which may be used.
- Use extinguishing media suitable for surrounding area.

#### Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.
Advice for firefighters	
Fire Fighting	<ul> <li>Alert Fire Brigade and tell them location and nature of hazard.</li> <li>Wear breathing apparatus plus protective gloves in the event of a fire.</li> <li>Prevent, by any means available, spillage from entering drains or water courses.</li> <li>Use fire fighting procedures suitable for surrounding area.</li> <li>DO NOT approach containers suspected to be hot.</li> <li>Cool fire exposed containers with water spray from a protected location.</li> <li>If safe to do so, remove containers fire.</li> <li>Equipment should be thoroughly decontaminated after use.</li> </ul>
Fire/Explosion Hazard	<ul> <li>Non combustible.</li> <li>Not considered a significant fire risk, however containers may burn.</li> <li>Decomposition may produce toxic fumes of: hydrogen chloride nitrogen oxides (NOx) phosphorus oxides (POx) sulfur oxides (SOx) silicon dioxide (SiO2) May emit poisonous fumes.</li> <li>May emit corrosive fumes.</li> </ul>

#### SECTION 6 ACCIDENTAL RELEASE MEASURES

#### Personal precautions, protective equipment and emergency procedures

See section 8

#### **Environmental precautions**

See section 12

#### Methods and material for containment and cleaning up

Minor Spills	<ul> <li>Remove all ignition sources.</li> <li>Clean up all spills immediately.</li> <li>Avoid contact with skin and eyes.</li> <li>Control personal contact with the substance, by using protective equipment.</li> <li>Use dry clean up procedures and avoid generating dust.</li> </ul>

	Place in a suitable, labelled container for waste disposal.
Major Spills	<ul> <li>Moderate hazard.</li> <li>CAUTION: Advise personnel in area.</li> <li>Alert Emergency Services and tell them location and nature of hazard.</li> <li>Control personal contact by wearing protective clothing.</li> <li>Prevent, by any means available, spillage from entering drains or water courses.</li> <li>Recover product wherever possible.</li> <li>IF DRY: Use dry clean up procedures and avoid generating dust. Collect residues and place in sealed plastic bags or other containers for disposal. IF WET: Vacuum/shovel up and place in labelled containers for disposal.</li> <li>ALWAYS: Wash area down with large amounts of water and prevent runoff into drains.</li> <li>If contamination of drains or waterways occurs, advise Emergency Services.</li> </ul>

Personal Protective Equipment advice is contained in Section 8 of the SDS.

## SECTION 7 HANDLING AND STORAGE

Precautions for safe handling	
Safe handling	<ul> <li>Avoid all personal contact, including inhalation.</li> <li>Wear protective clothing when risk of exposure occurs.</li> <li>Use in a well-ventilated area.</li> <li>Prevent concentration in hollows and sumps.</li> <li>DO NOT enter confined spaces until atmosphere has been checked.</li> <li>DO NOT allow material to contact humans, exposed food or food utensils.</li> <li>Avoid contact with incompatible materials.</li> <li>When handling, DO NOT eat, drink or smoke.</li> <li>Keep containers securely sealed when not in use.</li> <li>Avoid physical damage to contairers.</li> <li>Always wash hands with soap and water after handling.</li> <li>Work clothes should be laundered separately. Launder contaminated clothing before re-use.</li> <li>Use good occupational work practice.</li> <li>Observe manufacturer's storage and handling recommendations contained within this SDS.</li> <li>Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.</li> </ul>
Other information	<ul> <li>Store in original containers.</li> <li>Keep containers securely sealed.</li> <li>Store in a cool, dry area protected from environmental extremes.</li> <li>Store away from incompatible materials and foodstuff containers.</li> <li>Protect containers against physical damage and check regularly for leaks.</li> <li>Observe manufacturer's storage and handling recommendations contained within this SDS.</li> <li>For major quantities:</li> <li>Consider storage in bunded areas - ensure storage areas are isolated from sources of community water (including stormwater, ground water, lakes and streams).</li> <li>Ensure that accidental discharge to air or water is the subject of a contingency disaster management plan; this may require consultation with local authorities.</li> </ul>

### Conditions for safe storage, including any incompatibilities

Suitable container	<ul> <li>Check that containers are clearly labelled</li> <li>Packaging as recommended by manufacturer.</li> <li>[20kg bag.</li> </ul>
Storage incompatibility	<ul> <li>Calcium sulfate:</li> <li>reacts violently with reducing agents, acrolein, alcohols, chlorine trifluoride, diazomethane, ethers, fluorine, hydrazine, hydrazinium perchlorate, hydrogen peroxide, finely divided aluminium or magnesium, peroxyfuroic acid, red phosphorus, sodium acetylide</li> <li>sensitises most organic azides which are unstable shock- and heat-sensitive explosives</li> <li>may form explosive materials with 1,3-di(5-tetrazoly)thiazene</li> <li>is incompatible with glycidol, isopropyl chlorocarbonate, nitrosyl perchlorate, sodium borohydride</li> <li>is hygroscopic; reacts with water to form gypsum and Plaster of Paris</li> <li>Ammonium sulfate:</li> <li>is strongly acid in aqueous solution</li> <li>reacts with caustics forming ammonia</li> <li>reacts violently with potassium chlorate</li> <li>when hot reacts with nitrates, nitrites, chlorates</li> <li>attacks metals</li> <li>is incompatible with sulfuric acid, aliphatic amines, alkanolamines, amides, organic anhydrides, isocyanates, vinyl acetate, alkylene oxides, epichlorohydrin, potassium plus ammonium nitrate, sodium-potassium powder plus ammonium nitrate</li> <li>mixtures with sodium hypochlorite form unstable, explosive nitrogen trichloride</li> <li>WARNING: Avoid or control reaction with peroxides. All <i>transition metal</i> peroxides should be considered as potentially explosive. For example transition metal complexes of alkyl hydroperoxides may decompose explosively.</li> <li>The pi-complexes formed between chromium(0), vanadium(0) and other transition metals (haloarene-metal complexes) and mono-or poly-fluorobenzene show extreme sensitivity to heat and are explosive.</li> <li>Avoid reaction with borohydrides or cyanoborohydrides</li> <li>Avoid strong bases.</li> </ul>
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X — Must not be stored together

• May be stored together with specific preventions

+ — May be stored together

### SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

## **Control parameters**

## OCCUPATIONAL EXPOSURE LIMITS (OEL)

Source	Ingredient	Material name TI		TWA	TWA STEL		STEL Peak			Notes
New Zealand Workplace Exposure Standards (WES)	calcium sulfate	Calcium sulphate (Gypsum, Plaster of Paris) 10 n			ng/m3 Not Available		ble	Not Available		Not Available
New Zealand Workplace Exposure Standards (WES)	ferric sulfate, monohydrate	Iron salts, soluble, as Fe 1 mg/			1/m3 Not Available		ble	Not Available		Not Available
EMERGENCY LIMITS										
Ingredient	Material name				TEEL-	1	TEE	EEL-2		EL-3
ammonium sulfate	Ammonium sulfate				13 mg/m3 140		140 r	40 mg/m3 8		) mg/m3
calcium sulfate	Calcium(II) sulfate dihydrate (1:1:2)				30 mg/m3 330 r		) mg/m3 2,(		00 mg/m3	
calcium sulfate	Calcium sulfate anhydrous; (Drierite; Gypsum; Plaster of Paris)				30 mg/m3 330 r		mg/m3 2,0		00 mg/m3	
ferric sulfate, monohydrate	Ferric sulfate; (Iron(III) sulfate)				11 mg/m3 12		120 r	0 mg/m3 7		) mg/m3
potassium chloride	Potassium chloride				7.8 mg/m3 86 m		86 m	mg/m3 51		) mg/m3
Ingradiant	Original IDL H		Bavia							
Ingredient	Original IDLH			Revised IDLH						
ammonium sulfate	Not Available			Not Available						
calcium sulfate	Not Available			Not Available						
ferric sulfate, monohydrate	Not Available			Not Available						
calcium phosphate, monobasic	Not Available			Not Available						
antigorite	Not Available			Not Available						
potassium chloride	Not Available			Not Available						

### Exposure controls

	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk. Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use. Employers may need to use multiple types of controls to prevent employee overexposure. Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to obtain adequate protection. An approved self contained breathing apparatus (SCBA) may be required in some situations. Provide adequate ventilation in warehouse or closed storage area. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.					
	Type of Contaminant:		Air Speed:			
	solvent, vapours, degreasing etc., evaporating from tank (in still air).					
Appropriate engineering	aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer trans acid fumes, pickling (released at low velocity into zone of active generation)	0.5-1 m/s (100-200 f/min.)				
controls	direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)					
	grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial rapid air motion).	2.5-10 m/s (500-2000 f/min.)				
	Within each range the appropriate value depends on:					
	Lower end of the range Upper end of the range					
	1: Room air currents minimal or favourable to capture	1: Disturbing room air currents				
	2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity				
	3: Intermittent, low production.	w production. 3: High production, heavy use				
	4: Large hood or large air mass in motion	ass in motion 4: Small hood-local control only				
	Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple square of distance from the extraction point (in simple cases). Therefore the air speed at the extra reference to distance from the contaminating source. The air velocity at the extraction fan, for exar extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mecha the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of used.	extraction pipe. Velocity generally action point should be adjusted, ac nple, should be a minimum of 1-2 nical considerations, producing pe 10 or more when extraction syste	decreases with the ccordingly, after m/s (200-400 f/min) for rformance deficits within ms are installed or			

Personal protection



Eye and face protection	<ul> <li>Safety glasses with side shields.</li> <li>Chemical goggles.</li> <li>Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]</li> </ul>
Skin protection	See Hand protection below
Hands/feet protection	The selection of suitable gives does not only dopend on the material, but also on further marks of quality which vary throm manufacturer to manufacturer. Where the chemical is a perparetion of several substances, the resistance of the gives material can not be calculated in advance and has therefore to be checked prior to the application. The exact threads through time for substances has to be obtained from the manufacturer of the protective gives and has to be observed when making a final choice. Parsonal hygine is a key dement of effective hand care. Gives must only be wom on clean hands. After using gives, hands should be washed and dried throughly. Application of a non-perfumed moisturiser is recommended. Suitability and durability of give type is dependent on usage. Important factors in the selection of gives include: <ul> <li>requency and durability of give type is dependent on usage. Important factors in the selection of gives include:</li> <li>the quency and durability of give type is dependent on usage. Important factors in the selection of gives include:</li> <li>the quency and durability of give type is dependent on usage. Important factors in the selection allows include:</li> <li>the quency and durability of give type is dependent on usage. Important factors in the selection class of 5 or higher (breakthrough time greater than A240 minutes according to EN374, ASN252 2161.11 or national equivalent);</li> <li>When nonly brief contact is expected, a give with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN374, ASN252 2161.10 to rational equivalent);</li> <li>Some give polymer types are less affected by movement and this should be taken into account when considering gives for long-term use.</li> <li>Contaminated gives should be replaced.</li> </ul> <li>Far when breakthrough time &gt; 420 min.</li> <li>For general applications, gives with a prote</li>
Body protection	See Uther protection below
Other protection	<ul> <li>Overalls.</li> <li>P.V.C. apron.</li> <li>Barrier cream.</li> <li>Skin cleansing cream.</li> <li>Eye wash unit.</li> </ul>

#### Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

"Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the *computer-generated* selection:

Lawn Mix with Moss Killer (FE)

Material	CPI
BUTYL	С
NATURAL RUBBER	С
NEOPRENE	С
PVA	С
VITON	С

Respiratory protection

Particulate. (AS/NZS 1716 & 1715, EN 143:2000 & 149:001, ANSI Z88 or national equivalent)

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	P1 Air-line*	-	PAPR-P1 -
up to 50 x ES	Air-line**	P2	PAPR-P2
up to 100 x ES	-	P3	-
		Air-line*	-
100+ x ES	-	Air-line**	PAPR-P3

\* - Negative pressure demand \*\* - Continuous flow

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

\* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

NOTE: As a series of factors will influence the actual performance of the glove, a final

 Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.

selection must be based on detailed observation. -

\* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

- The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
- Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory protection. These may be government mandated or vendor recommended.
- Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
- Use approved positive flow mask if significant quantities of dust becomes airborne.
- Try to avoid creating dust conditions.

### SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

#### Information on basic physical and chemical properties

Appearance	Granular blend; partly soluble in water.				
Physical state	Divided Solid	Relative density (Water = 1)	Not Available		
Odour	Not Available	Partition coefficient n-octanol / water	Not Available		
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Applicable		
pH (as supplied)	Not Available	Decomposition temperature	Not Available		
Melting point / freezing point (°C)	Not Available	Viscosity (cSt)	Not Applicable		
Initial boiling point and boiling range (°C)	Not Available	Molecular weight (g/mol)	Not Applicable		
Flash point (°C)	Not Applicable	Taste	Not Available		
Evaporation rate	Not Available	Explosive properties	Not Available		
Flammability	Not Applicable	Oxidising properties	Not Available		
Upper Explosive Limit (%)	Not Applicable	Surface Tension (dyn/cm or mN/m)	Not Applicable		
Lower Explosive Limit (%)	Not Applicable	Volatile Component (%vol)	Not Available		
Vapour pressure (kPa)	Not Applicable	Gas group	Not Available		
Solubility in water (g/L)	Partly miscible	pH as a solution (1%)	Not Available		
Vapour density (Air = 1)	Not Available	VOC g/L	Not Available		

#### SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	<ul> <li>Unstable in the presence of incompatible materials.</li> <li>Product is considered stable.</li> <li>Hazardous polymerisation will not occur.</li> </ul>
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

## SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Inhalation of dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual. Levels above 10 micrograms per cubic metre of suspended inorganic sulfates in the air may cause an excess risk of asthmatic attacks in susceptible people. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled. If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures. Effects on lungs are significantly enhanced in the presence of respirable particles.
Ingestion	Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. Sulfates are not well absorbed orally, but can cause diarrhoea. Large doses of ammonia or injected ammonium salts may produce diarrhoea and may be sufficiently absorbed to produce increased production of urine and systemic poisoning. Symptoms include weakening of facial muscle, tremor, anxiety, reduced muscle and limb control.
Skin Contact	This material can cause inflammation of the skin on contact in some persons. The material may accentuate any pre-existing dermatitis condition Four students received severe hand burns whilst making moulds of their hands with dental plaster substituted for Plaster of Paris. The dental plaster known

	as "Stone" was a special form of calcium sulfate hemihydrate containing alpha-hemihydrate crystals that provide high compression strength to the moulds. Beta-hemihydrate (normal Plaster of Paris) does not cause skin burns in similar circumstances. Irritation and skin reactions are possible with sensitive skin Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.		
Eye	If applied to the eyes, this material causes severe eye damage.		
Chronic	Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. There is some evidence that inhaling this product is more likely to cause a sensitisation reaction in some persons compared to the general population. Overexposure to the breathable dust may cause coughing, wheezing, difficulty in breathing and impaired lung function. Chronic symptoms may include decreased vital lung capacity and chest infections. Repeated exposures in the workplace to high levels of fine-divided dusts may produce a condition known as pneumoconiosis, which is the lodgement of any inhaled dusts in the lung, irrespective of the effect. This is particularly true when a significant number of particles less than 0.5 microns (1/50000 inch) are present. Lung shadows are seen in the X-ray. Symptoms of pneumoconiosis may include a progressive dry cough, shortness of breath on exertion, increased chest expansion, weakness and weight loss. As the disease progresses, the cough produces stringy phlegm, vital capacity decreases further, and shortness of breath becomes more severe. Other signs or symptoms include changed breath sounds, reduced oxygen uptake during exercise, emphysema and rarely, pneumothorax (air in the lung cavity). Removing workers from the possibility of further exposure to dust generally stops the progress of lung abnormalities. When there is high potential for worker exposure, examinations at regular period with demage to the liver and pancreas. People with a genetic disposition to poor control over iron are at an increased risk. Levels above 10 micrograms per cubic metre of suspended inorganic sulfates in the air may cause an excess risk of asthmatic attacks in susceptible people.		
Lawn Mix with Moss Killer (FE)	TOXICITY           Not Available	IRRITATION Not Available	
	τοχιζιτχ	IRRITATION	
ammonium sulfate	Oral (rat) LD50: >2000 mg/kg <sup>[2]</sup>	Not Available	
	ΤΟΧΙΟΙΤΥ	IRRITATION	
calcium sulfate	Oral (rat) LD50: >1-581 mg/kg <sup>[1]</sup>	Not Available	
	TOXICITY	IRRITATION	
ferric sulfate, monohydrate	dermal (rat) LD50: >2-000 mg/kg <sup>[1]</sup>	Not Available	
	Oral (rat) LD50: 1-487 mg/kg <sup>[1]</sup>		
	TOXICITY	IRRITATION	
	Dermal (rabbit) LD50: >2000 mg/kg <sup>[2]</sup>	Eye : Severe	
calcium phosphate, monobasic	Inhalation (rat) LC50: >2.6 mg/l/4h* <sup>[2]</sup>		
	Oral (rat) LD50: 3986 mg/kg <sup>[2]</sup>		
	ΤΟΧΙΟΙΤΥ	IRRITATION	
antigorite	Not Available	Not Available	
	TOXICITY	IRRITATION	
potassium chloride	Oral (rat) LD50: ~2-600 mg/kg <sup>[1]</sup>	Eye (rabbit): 500 mg/24h - mild	
Legend:	1. Value obtained from Europe ECHA Registered Substances - Acute toxi data extracted from RTECS - Register of Toxic Effect of chemical Substar	city 2.* Value obtained from manufacturer's SDS. Unless otherwise specified cces	

AMMONIUM SULFATE	For ammonium sulfate: Acute toxicity: Ammonium sulfate has relatively low acute toxicity. In healthy humans, inhaling high concentrations caused mild reduction in lung function. Animal testing has not shown ammonium sulfate to cause irritation to the skin and eyes. There is no available data on sensitization. Repeat dose toxicity: Testing in animals has not shown any chronic toxic effects, except for diarrhoea. Reproductive toxicity: There are no valid studies available on the effects of ammonium sulfate on fertility and development. Developmental toxicity: Studies of developmental toxicity for ammonium sulfate are not available. Genetic toxicity: Testing with bacteria and yeasts did not reveal ammonium sulfate to cause mutations, and in mammalian and human cell cultures, it did not cause chromosomal aberrations.
CALCIUM SULFATE	Gypsum (calcium sulfate dehydrate) irritates the skin, eye, mucous membranes, and airways. A series of studies involving Gypsum industry workers in Poland reported chronic, non-specific airways diseases. Repeat dose toxicity: Examination of workers at a gypsum manufacturing plant found restrictive defects on long-function tests in those who were chronically exposed to gypsum dust. Synergistic/antagonistic effects: Gypsum appears to be protective on quartz toxicity in animal testing. On the other hand, it tended to aggravate tuberculosis in animals. Cytotoxicity: Tests results regarding cytotoxicity have been negative. Cancer-causing potential: Tests involving animals produced mixed results; no causal relationship between gypsum and tumour formation was found. Genetic toxicity: Test on bacterial cells have shown negative results. Developmental toxicity: In animal testing, developmental toxicity was not seen.
FERRIC SULFATE, MONOHYDRATE	Bacterial mutagen

ANTIGORITE	The overuse of talc in nursing infants has resulted in respiratory damage causing fluid in the lungs and lung inflammation which may lead to death within hours of inhalation. Long-term exposure can also cause a variety of respiratory symptoms.		
POTASSIUM CHLORIDE	The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.		
AMMONIUM SULFATE & CALCIUM SULFATE & FERRIC SULFATE, MONOHYDRATE & CALCIUM PHOSPHATE, MONOBASIC	Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. On the other hand, industrial bronchitis is a disorder that occurs as a result of exposure due to high concentrations of irritating substance (often particles) and is completely reversible after exposure ceases. The disorder is characterized by difficulty breathing, cough and mucus production.		
FERRIC SULFATE, MONOHYDRATE & ANTIGORITE	No significant acute toxicological data identified in literature search.		
Acute Toxicity	¥	Carcinogenicity	0
Skin Irritation/Corrosion	✓	Reproductivity	0
Serious Eye Damage/Irritation	✓	STOT - Single Exposure	×
Respiratory or Skin sensitisation	$\otimes$	STOT - Repeated Exposure	0
Mutagenicity	$\otimes$	Aspiration Hazard	$\otimes$
		Legend: X - L	Data available but does not fill the criteria for classification

🚫 – Data Not Available to make classification

## SECTION 12 ECOLOGICAL INFORMATION

## Toxicity

Lawn Mix with Moss Killer (FE)	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	Not Available	Not Available	Not Available	Not Available	Not Available
	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	0.068mg/L	4
ammonium sulfate	EC50	48	Crustacea	Crustacea 121.7mg/L	
	EC50	96	Algae or other aquatic plants	Algae or other aquatic plants 254000mg/L	
	NOEC	216	Fish	0.064mg/L	4
	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	>1970mg/L	4
calcium sulfate	EC50	96	Algae or other aquatic plants	3200mg/L	4
	EC0	96	Crustacea	=1255.000mg/l	. 1
	NOEC	504	Crustacea	360mg/L	4
	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
ferric sulfate, monohydrate	LC50	96	Fish	28mg/L	4
	NOEC	48	Crustacea	0.1mg/l	. 4
	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	>13.5mg/L	2
calcium phosphate, monobasic	EC50	48	Crustacea	Crustacea >2.9mg/L	
	EC50	72	Algae or other aquatic plants	Algae or other aquatic plants >4.4mg/L	
	NOEC	1848	Algae or other aquatic plants	0.00085mg/l	4
	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
antigorite	Not Available	Not Available	Not Available	Not Available	Not Available
	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	435mg/L	4
potassium chloride	EC50	48	Crustacea	83mg/L	4
	EC50	96	Algae or other aquatic plants	1337mg/L	4
	NOEC	48	Crustacea	240.45mg/l	. 4

Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12

(QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

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

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

Wastes resulting from use of the product must be disposed of on site or at approved waste sites. **DO NOT** discharge into sewer or waterways.

#### Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
ammonium sulfate	HIGH	HIGH
calcium sulfate	HIGH	HIGH
potassium chloride	HIGH	HIGH

#### **Bioaccumulative potential**

Ingredient	Bioaccumulation
ammonium sulfate	LOW (LogKOW = -2.2002)
calcium sulfate	LOW (LogKOW = -2.2002)
potassium chloride	LOW (LogKOW = -0.4608)

#### Mobility in soil

Ingredient	Mobility
ammonium sulfate	LOW (KOC = 6.124)
calcium sulfate	LOW (KOC = 6.124)
potassium chloride	LOW (KOC = 14.3)

### SECTION 13 DISPOSAL CONSIDERATIONS

### Waste treatment methods

Product / Packaging disposal	<ul> <li>Containers may still present a chemical hazard/ danger when empty.</li> <li>Return to supplier for reuse/ recycling if possible.</li> <li>Otherwise: <ul> <li>If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.</li> <li>Where possible retain label warnings and SDS and observe all notices pertaining to the product.</li> <li>Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.</li> <li>A Hierarchy of Controls seems to be common - the user should investigate: <ul> <li>Reduction</li> <li>Reuse</li> <li>Recycling</li> <li>Disposal (if all else fails)</li> </ul> </li> <li>This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate. In most instances the supplier of the material should be consulted.</li> <li>DO NOT allow wash water from cleaning or process equipment to enter drains.</li> <li>It may be necessary to collect all wash water for retartent before disposal.</li> <li>In all cases disposal to sever may be subject to local laws and regulations and these should be considered first.</li> <li>Where in doubt contact the responsible authority.</li> <li>Recycle wherever possible or consult manufacturer for recycling options.</li> <li>Consult State Land Waste Management Authority for disposal.</li> <li>Bury residue in an authorised landfill.</li> </ul> </li> <li>Recycle containers if possible, or dispose of in an authorised landfill.</li> </ul>

Ensure that the hazardous substance is disposed in accordance with the Hazardous Substances (Disposal) Notice 2017

#### **Disposal Requirements**

Packages that have been in direct contact with the hazardous substance must be only disposed if the hazardous substance was appropriately removed and cleaned out from the package. The package must be disposed according to the manufacturer's directions taking into account the material it is made of. Packages which hazardous content have been appropriately treated and removed may be recycled.

The hazardous substance must only be disposed if it has been treated by a method that changed the characteristics or composition of the substance and it is no longer hazardous. Only dispose to the environment if a tolerable exposure limit has been set for the substance.

Only deposit the hazardous substance into or onto a landfill or sewage facility or incinerator, where the hazardous substance can be handled and treated appropriately.

### **SECTION 14 TRANSPORT INFORMATION**

#### Labels Required

Marine Pollutant	NO Not Applicable
HAZCHEM	Not Applicable

Land transport (UN): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

### **SECTION 15 REGULATORY INFORMATION**

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

This substance is to be managed using the conditions specified in an applicable Group Standard

HSR Number	Group Standard		
HSR002624	N.O.S. (Subsidiary Hazard) Group Standard 2017		
HSR002535	Gas Under Pressure Mixtures (Subsidiary Hazard) Group S	tandard 2017	
HSR002596	Laboratory Chemicals and Reagent Kits Group Standard 2017		
HSR002530	Cleaning Products (Subsidiary Hazard) Group Standard 20'	17	
HSR002585	Fuel Additives (Subsidiary Hazard) Group Standard 2017		
HSR002519	Aerosols (Subsidiary Hazard) Group Standard 2017		
HSR002521	Animal Nutritional and Animal Care Products Group Standar	rd 2017	
HSR002606	Lubricants, Lubricant Additives, Coolants and Anti-freeze Ag	gents (Subsidiary Hazard) Group Standard 2017	
HSR002644	Polymers (Subsidiary Hazard) Group Standard 2017		
HSR002647	Reagent Kits Group Standard 2017		
HSR002670	Surface Coatings and Colourants (Subsidiary Hazard) Grou	p Standard 2017	
HSR002638	Photographic Chemicals (Subsidiary Hazard) Group Standa	ard 2017	
HSR002565	Embalming Products (Subsidiary Hazard) Group Standard 2	2017	
HSR002578	Food Additives and Fragrance Materials (Subsidiary Hazard	d) Group Standard 2017	
HSR002558	Dental Products (Subsidiary Hazard) Group Standard 2017		
HSR002684	Water Treatment Chemicals (Subsidiary Hazard) Group Star	ndard 2017	
HSR002573	Fire Fighting Chemicals Group Standard 2017		
HSR100425	Pharmaceutical Active Ingredients Group Standard 2017		
HSR002600	Leather and Textile Products (Subsidiary Hazard) Group Sta	ndard 2017	
HSR002571	Fertilisers (Subsidiary Hazard) Group Standard 2017		
HSR002648	Refining Catalysts Group Standard 2017		
HSR002653	Solvents (Subsidiary Hazard) Group Standard 2017		
HSR002544	Construction Products (Subsidiary Hazard) Group Standard 2017		
HSR002549	Corrosion Inhibitors (Subsidiary Hazard) Group Standard 2017		
HSR100757	Veterinary Medicine (Limited Pack Size, Finished Dose) Standard 2017		
HSR100758	Veterinary Medicines (Non-dispersive Closed System Applic	cation) Group Standard 2017	
HSR100759	Veterinary Medicines (Non-dispersive Open System Application	tion) Group Standard 2017	
HSR100580	Tattoo and Permanent Makeup Substances Group Standard 2	2017	
HSR002612	Metal Industry Products (Subsidiary Hazard) Group Standar	d 2017	
HSR002503	Additives, Process Chemicals and Raw Materials (Subsidiar	ry Hazard) Group Standard 2017	
HSR002552	Cosmetic Products Group Standard 2017		
AMMONIUM SULFATE(7783-20-2)	IS FOUND ON THE FOLLOWING REGULATORY LISTS		
New Zealand Hazardous Substances	s and New Organisms (HSNO) Act - Classification of	New Zealand Inventory of Chemicals (NZIoC)	
Chemicals			
CALCIUM SULFATE(7778-18-9) IS	FOUND ON THE FOLLOWING REGULATORY LISTS		
New Zealand Inventory of Chemicals (NZIoC) New Zealand Workplace Exposure Standards (WES)			
FERRIC SULFATE, MONOHYDRATE(10028-22-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS			
New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals New Zealand Workplace Exposure Standards (WES)			
New Zealand Inventory of Chemicals (NZIoC)			
CALCIUM PHOSPHATE, MONOBASIC(7758-23-8) IS FOUND ON THE FOLLOWING REGULATORY LISTS			
New Zealand Hazardous Substances Chemicals	s and New Organisms (HSNO) Act - Classification of	New Zealand Inventory of Chemicals (NZIoC)	
ANTIGORITE(12135-86-3) IS FOUN	ND ON THE FOLLOWING REGULATORY LISTS		
New Zealand Inventory of Chemicals	(NZIOC)		

POTASSIUM CHLORIDE(7447-40-7) IS FOUND ON THE FOLLOWING REGULATORY LISTS

New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals

New Zealand Inventory of Chemicals (NZIoC)

## Hazardous Substance Location

Subject to the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Hazard Class	Quantity beyond which controls apply for closed containers	Quantity beyond which controls apply when use occurring in open containers
Not Applicable	Not Applicable	Not Applicable

#### **Certified Handler**

Subject to Part 4 of the Health and Safety at Work (Hazardous Substances) Regulations 2017.

Class of substance	Quantities
Not Applicable	Not Applicable

Refer Group Standards for further information

### **Tracking Requirements**

Not Applicable

### National Inventory Status

National Inventory	Status	
Australia - AICS	N (Ingredients determined not to be hazardous) Non-disclosed ingredients	
Canada - DSL	N (antigorite; Ingredients determined not to be hazardous) Non-disclosed ingredients	
Canada - NDSL	N (ferric sulfate, monohydrate; potassium chloride; ammonium sulfate; calcium sulfate; calcium phosphate, monobasic; antigorite; Ingredients determined not to be hazardous) Non-disclosed ingredients	
China - IECSC	N (Ingredients determined not to be hazardous) Non-disclosed ingredients	
Europe - EINEC / ELINCS / NLP	N (antigorite; Ingredients determined not to be hazardous) Non-disclosed ingredients	
Japan - ENCS	N (Ingredients determined not to be hazardous) Non-disclosed ingredients	
Korea - KECI	N (Ingredients determined not to be hazardous) Non-disclosed ingredients	
New Zealand - NZIoC	N (Ingredients determined not to be hazardous) Non-disclosed ingredients	
Philippines - PICCS	N (Ingredients determined not to be hazardous) Non-disclosed ingredients	
USA - TSCA	N (antigorite; Ingredients determined not to be hazardous) Non-disclosed ingredients	
Legend:	Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)	

### **SECTION 16 OTHER INFORMATION**

Revision Date	30/11/2016
Initial Date	Not Available

### Other information

### Ingredients with multiple cas numbers

Name	CAS No
calcium sulfate	7778-18-9, 10101-41-4, 14798-04-0
calcium phosphate, monobasic	7758-23-8, 10031-30-8

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chernwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

#### Definitions and abbreviations

PC-TWA: Permissible Concentration-Time Weighted Average

PC-STEL: Permissible Concentration-Short Term Exposure Limit

IARC: International Agency for Research on Cancer

ACGIH: American Conference of Governmental Industrial Hygienists

STEL: Short Term Exposure Limit

TEEL: Temporary Emergency Exposure Limit  $_{\circ}$  IDLH: Immediately Dangerous to Life or Health Concentrations

OSF: Odour Safety Factor

NOAEL :No Observed Adverse Effect Level

LOAEL: Lowest Observed Adverse Effect Level

TLV: Threshold Limit Value

LOD: Limit Of Detection

OTV: Odour Threshold Value

BCF: BioConcentration Factors

BEI: Biological Exposure Index

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