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SAFETY DATA SHEET

YaraMila COMPLEX

Section 1. Identification

Product name	:	YaraMila COMPLEX
Product type	:	Solid (prills)
Product code	:	PF595P

Uses

Area of application	:	Professional applications
Material uses	:	Fertilizers.

Supplier

Supplier's details	:	Yara Fertilizers (New Zealand) Limited

Address

Street	:	4/211 Heretaunga Street East
Postal code	:	4122
City	:	Hastings
Country	:	New Zealand

P.O. Box Address

P.O. Box	:	8746
Postal code	:	4157
City	:	Hastings
Country	:	New Zealand

Telephone number	:	+64 6 877 6600
Fax no.	:	+64 6 877 6610
e-mail address of person responsible for this SDS	:	info.yara@xtra.co.nz
Emergency telephone number (with hours of operation)	:	+64 9929 1483 (7/24)

National advisory body/Poison Center

Name	:	New Zealand National Poisons Centre
Telephone number	:	0800 POISON = 0800 764 766 (NZ only) / +64 3 479 7248 (outside NZ)
Hours of operation	:	24h

Section 2. Hazards identification

HSNO Classification : EYE IRRITATION - Category 2
TOXIC TO REPRODUCTION - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements :

H319	Causes serious eye irritation.
H360	May damage fertility or the unborn child.

Precautionary statements

Prevention :

P202	Do not handle until all safety precautions have been read and understood.
P280	Wear protective gloves/clothing and eye/face protection.
P264-a	Wash hands thoroughly after handling.

Response :

P308	IF exposed or concerned:
P313	Get medical attention.
P305	IF IN EYES:
P351	Rinse cautiously with water for several minutes.
P338	Remove contact lenses, if present and easy to do. Continue rinsing.

Other hazards which do not result in classification : None known.

Additional information : Product forms slippery surface when combined with water.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	% (w/w)	CAS number
ammonium nitrate	>= 20 - < 25	6484-52-2
potassium nitrate	>= 10 - < 12.5	7757-79-1
calcium fluoride	>= 1 - < 2	7789-75-5
disodium tetraborate pentahydrate	>= 0.1 - < 0.2	12179-04-3

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.

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

Remark : This product contains Boron (see section 7 and 11).

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Rinse with plenty of running water. Check for and remove any contact lenses. If irritation persists, get medical attention.

Inhalation : If inhaled, remove to fresh air. In case of inhalation of decomposition products in a fire, symptoms may be delayed. Get medical attention if you feel unwell. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Wash with soap and water. Get medical attention if irritation develops.

Ingestion : Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if you feel unwell.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : No known significant effects or critical hazards.

Ingestion : Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

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

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

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

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. 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.

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. 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 flooding quantities of water for extinction.

Unsuitable extinguishing media : Do NOT use chemical extinguisher or foam or attempt to smother the fire with steam or sand.

Specific hazards arising from the chemical	:	The product itself is not combustible but it can support combustion, even in absence of air. On heating it melts and further heating can cause decomposition, releasing toxic fumes containing nitrogen oxides and ammonia.
Hazardous thermal decomposition products	:	Decomposition products may include the following materials: nitrogen oxides, sulfur oxides, phosphorus oxides, halogenated compounds, metal oxide/oxides, ammonia, Avoid breathing dusts, vapors or fumes from burning materials., In case of inhalation of decomposition products in a fire, symptoms may be delayed.
Hazchem or Emergency Action Code	:	Not available.
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.
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.
Remark	:	Non-explosive.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	:	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. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
For emergency responders	:	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
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).

Methods and materials for containment and cleaning up

Small spill	:	Move containers from spill area. 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.
Large spill	:	Move containers from spill area. 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. 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

Not for human or animal consumption.

Precautions for safe handling	:	Put on appropriate personal protective equipment (see Section 8). Do not handle until all safety precautions have been read and understood. As a precaution, keep exposure as low as possible for pregnant women, children and workers in reproductive age. Avoid dust generation. Do not breathe dust. Do not get in eyes or on skin or clothing. Do not ingest. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. 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. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator.
Protective measures	:	Put on appropriate personal protective equipment (see Section 8). Do not handle until all safety precautions have been read and understood. As a precaution, keep exposure as low as possible for pregnant women, children and workers in reproductive age. Avoid dust generation. Do not breathe dust. Do not get in eyes or on skin or clothing. Do not ingest. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. 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. 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.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. Keep away from: organic materials, oil and grease.

Specific recommendations to end users : Do not generate and inhale liquid fertilizer aerosols.

In addition to overalls, gloves and eye protection, use of efficient respiratory protection (P2/P3 respirators with a tight face seal) during discharge of fertilizer bags and maintenance of equipment is recommended to minimize inhalation exposure and to ensure safe-use during this activity (see section 8).

Risk assessments show safe use during normal spreading of fertilizers containing below 5% of boron by tractor (liquid or granular) and backpack (liquid).

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
calcium fluoride (Fluorides as F)	**ACGIH TLV (1994-09-01).** TWA 2.5 mg/m3 (as F) **NZ HSWA 2015 - GRWM 2016 (1994-01-01).** TWA 2.5 mg/m3 (as F) **Safe Work Australia (1995-05-01).** TWA 2.5 mg/m3 (as F) **NZ HSWA 2015 - GRWM 2016 (1994-01-01).** TWA 2.5 mg/m3 (as F)
disodium tetraborate pentahydrate	**ACGIH TLV (2005-01-01).** TWA 2 mg/m3 Form: Inhalable fraction STEL 6 mg/m3 Form: Inhalable fraction **NZ HSWA 2015 - GRWM 2016 (1994-01-01).** TWA 1 mg/m3

Appropriate engineering controls : 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.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : A washing facility or water for eye and skin cleaning purposes should be present. 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. Wash

contaminated clothing before reusing.

Eye/face 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. **Recommended:** Tightly-fitting goggles, Europe:, CEN: EN166,

Skin protection

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. For general applications, we recommend gloves with a thickness typically greater than 0.35 mm. It should be emphasized that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved.

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.

Respiratory protection : Use respiratory protection with more than 94% efficiency (P2, P3 or N95) and a tight face seal, when risk of exposure to dust.

Personal protective equipment (Pictograms) :

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 [prills]

Color : Green.,

Odor : Odorless.

pH : 4 - 7 [Conc. (% w/w): 100 g/l]

Melting point/freezing point : 155 °C (311 °F)

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

Flash point : Not applicable.

Flammability : Non-flammable.

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

Vapor pressure : Not applicable.

Relative vapor density	:	Not applicable.
Bulk density	:	1,090 - 1,190 kg/m3
Solubility(ies)	:	Soluble in the following materials: cold water
Solubility in water	:	> 80 g/l
Partition coefficient: n-octanol/water	:	Not applicable.
Auto-ignition temperature	:	Not applicable.
Decomposition temperature	:	Not applicable.
Viscosity	:	**Kinematic:** Not applicable.
Explosive properties	:	Non-explosive.
Oxidizing properties	:	Non-oxidizer. UN Manual of Tests and Criteria, Section 39.

Particle characteristics

Median particle size	:	3 mm

Section 10. Stability and reactivity

Reactivity	:	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	:	The product is stable.
Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	:	Avoid contamination by any source including metals, dust and organic materials.
Incompatible materials	:	alkalis, combustible materials, reducing materials, organic materials, Acids
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	Method	Species	Result	Exposure
ammonium nitrate				
	OECD 401 LD50 Oral	Rat	2,950 mg/kg	Not applicable.

	OECD 402 LD50 Dermal	Rat	> 5,000 mg/kg	Not applicable.
potassium nitrate				
	LD50 Oral	Rat	2,000 mg/kg	Not applicable.
	LD50 Dermal	Rat	> 5,000 mg/kg	Not applicable.
calcium fluoride				
	OECD 423 LD50 Oral	Rat	> 5,000 mg/kg	Not applicable.
	OECD 403 LC50 Inhalation Dusts and mists	Rat	> 5.07 mg/l	4 h
disodium tetraborate pentahydrate				
	LD50 Oral	Rat	2,000 mg/kg	Not applicable.
	LD50 Dermal	Rabbit	> 5,000 mg/kg	Not applicable.

Conclusion/Summary : No known significant effects or critical hazards.

Irritation/Corrosion

Product/ingredient name	Method	Species	Result	Exposure
ammonium nitrate				
	OECD 405 Eyes	Rabbit	Irritant	
potassium nitrate				
	OECD 404 Skin	Rabbit	Non-irritating.	

Conclusion/Summary

Skin : No known significant effects or critical hazards.

Eyes : Causes serious eye irritation.

Respiratory : No known significant effects or critical hazards.

Sensitization

Product/ingredient name	Method	Species	Result
ammonium nitrate			
	OECD 429 Skin	Mouse	Not sensitizing

Conclusion/Summary

Skin : No known significant effects or critical hazards.

Respiratory : No known significant effects or critical hazards.

Mutagenicity

Product/ingredient name	Method	Test detail	Result
ammonium nitrate			
	OECD 473	Mammalian Toxicity - Genotoxicity - In vitro Mammalian Chromosome Aberration Test or	Negative

		Mammalian Bone Marrow Chromosomal Abberation Test or Mammalian Erythrocyte Micronucleus Test Experiment: In vitro	
	OECD 471	Bacteria Experiment: In vitro	Negative

Conclusion/Summary : No known significant effects or critical hazards.

Carcinogenicity

Conclusion/Summary : No known significant effects or critical hazards.

Reproductive toxicity

Product/ingredient name	Method	Species	Result	Exposure
ammonium nitrate				
	OECD 422 Oral	Rat	Fertility effects- Negative Developmental- Negative NOAEL > 1500 mg/kg bw/day	28 days

Conclusion/Summary : May damage fertility or the unborn child.

Specific target organ toxicity (single exposure)

No known significant effects or critical hazards.

Specific target organ toxicity (repeated exposure)

No known significant effects or critical hazards.

Aspiration hazard

No known significant effects or critical hazards.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.
Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Skin contact : No known significant effects or critical hazards.
Ingestion : Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following: pain or irritation, watering, redness
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

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

Product/ingredient name	Method	Species	Result	Exposure
ammonium nitrate				
	OECD 422 Chronic NOAEL Oral	Rat	256 mg/kg	28 days
	OECD 412 Sub-acute NOEC Inhalation	Rat	> 185 mg/m³	2 weeks 5 hours per day

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : May damage fertility or the unborn child.

Effects on or via lactation : No known significant effects or critical hazards.

Other effects : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following: pain or irritation, watering, redness
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral	Dermal	Inhalation (gases)	Inhalation (vapors)	Inhalation (dusts and mists)
YaraMila COMPLEX	2,950 mg/kg	N/A	N/A	N/A	N/A
ammonium nitrate	2,950 mg/kg	N/A	N/A	N/A	N/A

Section 12. Ecological information

Toxicity

Product/ingredien	Method	Species	Result	Exposure

t name				
ammonium nitrate				
	Acute LC50 Fresh water	Fish	447 mg/l	48 h
	Acute EC50 Fresh water	Daphnia	490 mg/l	48 h
	Acute EC50 Salt water	Algae	1,700 mg/l	10 d
potassium nitrate				
	OECD 203 Acute LC50 Fresh water	Fish	> 100 mg/l	96 h
	Acute EC50 Fresh water	Daphnia	490 mg/l	48 h
	Acute EC50 Marine water	Algae	> 1,700 mg/l	240 h
calcium fluoride				
	Acute LC50 Fresh water	Fish	104.7 mg/l	96 h
	Acute EC50 Fresh water	Daphnia	50.94 mg/l	48 h
	Acute EC50 Fresh water	Algae	88.32 mg/l	96 h
disodium tetraborate pentahydrate				
	Acute LC50 Fresh water	Fish	> 100 mg/l	96 h
	Acute EC50 Fresh water	Daphnia	> 100 mg/l	48 h
	Acute EC50 Fresh water	Algae	> 100 mg/l	72 h

Conclusion/Summary : No known significant effects or critical hazards.

Persistence/degradability

Conclusion/Summary : No known significant effects or critical hazards.

Bioaccumulative potential

Conclusion/Summary : No known significant effects or critical hazards.

Mobility in soil

Soil/water partition coefficient (KOC) : Not available.

Mobility : Not available.

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

Section 13. Disposal considerations

Product

Methods of disposal : 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	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	Not applicable.	Not applicable.	Not applicable.
Transport hazard class(es)	Not applicable.	Not applicable.	Not applicable.
Packing group	Not applicable.	Not applicable.	Not applicable.
Environmental hazards	No.	No.	No.

14.6 Special precautions for user : Transport within user's premises: Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Remark : A NPK fertilizer not liable to self-sustaining exothermic decomposition according to the S.1 trough test as defined in the recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, part III, section 38.

Transport in bulk according to IMO instruments

Proper shipping name : AMMONIUM NITRATE BASED FERTILIZER

Remarks : **Solid bulk cargoes**
Harmful to the marine environment with regard to MARPOL Annex V: No
Material is hazardous only in bulk according to the IMSBC: No

IMSBC shipping group: C

Section 15. Regulatory information

HSNO Approval Number : HSR002571.
HSNO Group Standard : Fertilisers (Subsidiary Hazard)
HSNO Classification : EYE IRRITATION - Category 2
TOXIC TO REPRODUCTION - Category 1

Country information : **SCHEDULE 1 (CONDITIONS OF GROUP STANDARD) of the Fertilisers (Subsidiary Hazard) Group Standard 2006.** Any location at which a substance is manufactured or stored in quantities that exceed those set out in the Standards' Tables 3, 4, 5, 6 and 7 must comply with the corresponding conditions as set out in the Standards' clauses 6, 7 and 8.

Inventory list

Taiwan Chemical Substances Inventory (TCSI): All components are listed or exempted.
EC INVENTORY (EINECS/ELINCS): All components are listed or exempted.
Canada: At least one component is not listed in DSL but all such components are listed in NDSL.

Section 16. Other information

Key to abbreviations :
ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
bw = Body weight
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)
RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
SUSMP - Standard Uniform Schedule of Medicine and Poisons
SGG = Segregation Group
UN = United Nations

Key data sources : EU REACH ECHA/IUCLID5 CSR.
National Institute for Occupational Safety and Health, U.S. Dept. of Health, Education, and Welfare, Reports and Memoranda Registry of Toxic Effects of Chemical Substances.
Sphera Solutions Inc., 4777 Levy Street, St Laurent, Quebec HAR 2P9, Canada.HSNO Chemical Classification and Information database (CCID), New Zealand Inventory of Chemicals (NZIoC),

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Prepared by	:	Product Stewardship and Compliance (PSC).

|| Indicates information that has changed from previously issued version.

Notice to reader

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