

**1. Identification of Substance & Company**

**Product**

<b>Product name</b>	HayKing Granules
<b>Other names</b>	no other names
<b>Product codes</b>	NA
<b>HSNO approval</b>	HSR002521
<b>Approval description</b>	Animal Nutritional and Animal Care Products Group Standard 2020
<b>UN number</b>	NA
<b>DG class</b>	NA
<b>Proper Shipping Name</b>	NA
<b>Packaging group</b>	NA
<b>Hazchem code</b>	NA
<b>Uses</b>	Maize Silage preservative/additive

**Company Details**

<b>Company</b>	<b>Biostart LTD</b>	<b>Biostart Brands PTY Ltd</b>
<b>Address</b>	17 Reta Crescent Kerepehi 3671 New Zealand	L1/109 Jessie St Armidale NSW 2350 Australia
<b>Telephone</b>	0800 116 229	1800 359 555
<b>Website</b>	biostart.co.nz	biostart.com.au

**New Zealand Emergency Telephone Number: 0800 764 766**  
**Australian Emergency Number: 13 11 26**

**2. Hazard Identification**

**Approval**

This product is an approved substance under the Hazardous Substances and New Organisms Act (HSNO, Approval HSR002521, Animal Nutritional and Animal Care Products Group Standard 2020). The substance has been classified as hazardous according to the criteria in the Hazardous Substances (Hazard Classification) Notice 2020.

**GHS 7 Classes**

**Hazard Statements**

Skin irritation cat 2	H315 - Causes skin irritation.
Eye irritation cat. 2	H320 - Causes eye irritation.

**SYMBOLS**

**WARNING**



This mixture contains zeolite, which may contain crystalline silica. The following classification ONLY applies to this substance if it is in the form of a fine respirable dust in an occupational (chronic exposure) setting.:

Carcinogenicity, Cat 1A	H350	May cause cancer through inhalation of dust.
Specific Target Organ Toxicity, Cat 1 H372		Causes damage to lungs and respiratory system through prolonged or repeated exposure by inhalation of dusts.

### Australian GHS Classification

Skin irritation cat 2                      H315 - Causes skin irritation.  
 Eye irritation cat. 2                      H320 - Causes eye irritation.  
 Aquatic acute cat 4                      H402 - Harmful to aquatic life.

This mixture contains zeolite which may contain crystalline silica. The following classification ONLY applies to this substance if it is in the form of a fine respirable dust in an occupational (chronic exposure) setting:

Carcinogenicity, Cat 1A                      H350    May cause cancer through inhalation of dust.  
 Specific Target Organ Toxicity, Cat 1 H372    Causes damage to lungs and respiratory system through prolonged or repeated exposure by inhalation of dusts.

### Precautionary Statements

**Prevention**            P103 - Read label before use.  
                               P260 - Do not breathe vapours/dusts.  
                               P264 - Wash hands thoroughly after handling.  
                               P270 - Do not eat, drink or smoke when using this product.  
                               P273 - Avoid release to the environment.  
                               P280 - Wear protective gloves/protective clothing/eye protection.

**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.  
                               P337+P313 - If eye irritation persists: Get medical advice/attention.  
                               P302+P352 - IF ON SKIN: Wash with plenty of soap and water.  
                               P332+P313 - If skin irritation occurs: Get medical advice/ attention.  
                               P362 - Take off contaminated clothing and wash before re-use.  
                               P314 - Get medical advice/attention if you feel unwell.

**Storage**                No storage statements

**Disposal**              P501 - Dispose of contents/container in accordance with local/regional/national/international regulation.

### 3. Composition / Information on Ingredients

Component	CAS/ Identification	Conc (%)
Zeolite, granular: contains – crystalline aluminosilicates may contains oxides including silica* and aluminium oxide	1318-02-1	>60%
Nonviable fermentation products	proprietary	10-30%
Manganese sulphate monohydrate	7785-87-7	0.1-1%
Zinc sulphate	7733-02-0	0.1-1%
Ingredients not contributing to GHS 7 classes	Mixture	balance

This is a commercial product whose exact ratio of components may vary. Trace quantities of impurities are also likely.  
 \* silica: may include cristobalite and quartz (crystalline silica).

### 4. First Aid

#### General Information

If medical advice is needed, have product container or label at hand. You should call the National Poisons Centre if you feel that you may have been harmed or irritated by this product. The number is 0800 764 766 (0800 POISON) (24 hr emergency service).

**Recommended first aid facilities**                      Ready access to running water is required. Accessible eyewash is required.

#### Exposure

**Swallowed**                      Do NOT induce vomiting. Give a glass of water to drink. Contact a doctor.

**Eye contact**                      IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Apply continuous irrigation with water for at least 15 minutes holding eyelids apart. If eye irritation persists: Get medical advice.

**Skin contact**                      IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: get medical advice/attention. Take off contaminated clothing and wash before re-use.

**Inhaled**                              Generally, inhalation of vapours is unlikely to result in adverse health effects. If coughing, dizziness or shortness of breath is experienced, remove the patient to fresh air immediately. If patient is unconscious, place in the recovery position (on the side) for transport and contact a doctor.

**Advice to Doctor**

Treat symptomatically

**5. Firefighting Measures**

<b>Fire and explosion hazards:</b>	There are no specific risks for fire/explosion for this chemical. It is non-flammable.
<b>Suitable extinguishing substances:</b>	Carbon dioxide, extinguishing powder or water jet. Fight larger fires with water jet or alcohol resistant foam.
<b>Unsuitable extinguishing substances:</b>	Unknown.
<b>Products of combustion:</b>	Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Water. May form toxic mixtures in air and may accumulate in sumps, pits and other low-lying spaces, forming potentially explosive mixtures.
<b>Protective equipment:</b>	Self-contained breathing apparatus. Safety boots, non-flammable overalls, gloves, hat and eye protection.
<b>Hazchem code:</b>	NA

**6. Accidental Release Measures**

<b>Containment</b>	If greater than 10000L is stored, secondary containment and emergency plans to manage any potential spills must be in place. In all cases design storage to prevent discharge to storm water.
<b>Emergency procedures</b>	In the event of large spillage alert the fire brigade to location and give brief description of hazard. Wear protective equipment to prevent skin, eye and respiratory exposure. Clear area of any unprotected personnel.
<b>Clean-up method</b>	Sweep up the solid. Avoid creating dust. If appropriate, use a gentle water spray to wet material to minimise dust generation.
<b>Disposal</b>	UCollect and seal in properly labelled containers or drums for disposal. If contamination of crops, sewers or waterways has occurred advise local emergency services.
<b>Precautions</b>	Sweep up and collect recoverable material into labelled containers for recycling or salvage. This material may be suitable for approved landfill. Dispose of only in accord with all regulations.
	Wear protective equipment to prevent skin and eye contamination and the inhalation of dusts. Work up wind or increase ventilation.

**7. Storage & Handling**

<b>Storage</b>	Avoid storage of harmful substances with food. Store out of reach of children. Containers should be kept closed in order to minimise contamination. Keep from extreme heat and open flames. Avoid contact with incompatible substances as listed in Section 10.
<b>Handling</b>	Keep exposure to a minimum, and minimise the quantities kept in work areas. See section 8 with regard to personal protective equipment requirements.

**8. Exposure Controls / Personal Protective Equipment**

**Workplace Exposure Standards**

A workplace exposure standard (WES) has not been established by WorkSafe NZ for this product. There is a general limit of 3mg/m<sup>3</sup> for respirable particulates and 10mg/m<sup>3</sup> for inhalable particulates when limits have not otherwise been established.

NZ Workplace Exposure Stds	Ingredient	WES-TWA*	WES-STEL
	Aluminium oxide	10mg/m <sup>3</sup>	-
	Iron (II) Oxide	5mg/m <sup>3</sup> (as Fe)	-
	Magnesium oxide	10mg/m <sup>3</sup> (fume)	-
	Calcium oxide	2mg/m <sup>3</sup>	-
	Titanium dioxide	10mg/m <sup>3</sup>	-
	Crystalline silica (all forms)	0.025mg/m <sup>3</sup>	-
	Zinc compounds	Zinc oxide:: 2mg/m <sup>3</sup>	-
		Zinc oxide: 0.1mg/m <sup>3</sup> (respirable)	-
	Manganese sulphate monohydrate	0.2mg/m <sup>3</sup>	-
		0.02mg/m <sup>3</sup> (respirable)	-

**Exposure Standards – Australia**

<b>Australian Exposure Standards</b>	Zinc compounds	Zinc oxide dust: 10mg/m <sup>3</sup>	-
	Manganese sulphate monohydrate	1mg/m <sup>3</sup>	-
	Silicon dioxide	see crystalline silica	-
	Aluminium oxide	10mg/m <sup>3</sup>	-
	Iron (II) Oxide	5mg/m <sup>3</sup> (as Fe)	-
	Magnesium oxide	10mg/m <sup>3</sup> (fume)	-
	Calcium oxide	2mg/m <sup>3</sup>	-
	Titanium dioxide	10mg/m <sup>3</sup>	-
	Quartz (SiO <sub>2</sub> ):		
	quartz, respirable dust	0.05mg/m <sup>3</sup>	-
cristobalite, respirable dust	0.05mg/m <sup>3</sup>	-	

**Engineering Controls**

In industrial situations, it is expected that employee exposure to hazardous substances will be controlled to a level as far below the WES as practicable by applying the hierarchy of control required by the Health and Safety at Work Act (2015) and the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016. Exposure can be reduced by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods. If you believe air borne concentrations of mists, dusts or vapours are high, you are advised to modify processes or increase ventilation.

**Personal Protective Equipment**

**General**

Personal Protective Equipment (PPE) should not be used as the primary means of exposure protection, except in the event of an accident or emergency situation or where all other means of protection have proven to inadequate. Clean PPE after use or dispose of as appropriate. Store PPE for re-use in a clean place. Regular training on the correct use of PPE should be provided. In particular the correct fitting and use of respirators and where applicable the cleaning of respirators should be undertaken.

**Eyes**



Avoid contact with eyes. Use safety glasses and or chemical splash goggles if splashes are possible. Select eye protection in accordance with AS/NZS 1337.

**Skin**

Protective gloves and clothing are not normally necessary. However, it is prudent to wear gloves when handling chemicals in bulk or for an extended period of time.

**Respiratory**

Respirator is not required under normal use. Ensure adequate natural ventilation. If product is being used in confined conditions, the use of a mask or respirator may be preferred.

**WES Additional Information**

Not applicable

**9. Physical & Chemical Properties**

<b>Appearance</b>	solid, granular, tan colour
<b>Odour</b>	mild characteristic odour
<b>Odour Threshold</b>	no data
<b>pH</b>	~8
<b>Freezing/melting point</b>	solid at room temperature
<b>Boiling Point</b>	no data
<b>Flashpoint</b>	no data
<b>Flammability</b>	not flammable
<b>Upper &amp; lower flammable limits</b>	no data
<b>Vapour pressure</b>	no data
<b>Vapour density</b>	no data
<b>Specific gravity/density</b>	not specified
<b>Solubility</b>	completely soluble
<b>Partition coefficient</b>	no data
<b>Auto-ignition temperature</b>	no data
<b>Decomposition temperature</b>	no data
<b>Viscosity</b>	no data
<b>Particle Characteristics</b>	no data

**10. Stability & Reactivity**

<b>Stability</b>	Stable
<b>Conditions to be avoided</b>	Containers should be kept closed in order to avoid contamination. Keep from extreme heat and open flames. . Avoid the creation of dust.
<b>Incompatible groups</b>	Strong acids and bases, oxidisers, hydrogen fluoride.
<b>Substance Specific Incompatibility</b>	none known
<b>Hazardous decomposition products</b>	Oxides of carbon, sulphur
<b>Hazardous reactions</b>	Zeolites will react with hydrogen fluoride (HF) acid. Avoid contact with strong oxidising agents.

**11. Toxicological Information**

**Summary**

IF SWALLOWED: may cause gastrointestinal irritation.  
 IF IN EYES: may be irritating to the eye.  
 IF ON SKIN: Material may cause drying out of skin.  
 IF INHALED: May cause respiratory irritation. Also see chronic effects..  
 CHRONIC TOXICITY: The adverse health effects from respirable crystalline silica exposure-silicosis, cancer, scleroderma, tuberculosis, and nephrotoxicity- are chronic effects. This product is granular, but may become a respirable dust through sanding/grinding/milling.

**Supporting Data**

<b>Acute</b>	<b>Oral</b>	Using LD <sub>50</sub> 's for ingredients, the calculated LD <sub>50</sub> (oral, rat) for the mixture is >5,000 mg/kg. Data considered includes: Manganese sulphate monohydrate 782mg/kg (rat), Zinc sulphate 926mg/kg (mouse).
	<b>Dermal Inhaled</b>	No evidence of dermal toxicity. The substance is not considered acutely toxic if inhaled, however there may be irritation of the respiratory tract if dust is inhaled. Short term (acute) silicosis (see "systemic" below) can also occur with one-off exposures to extremely high levels of fine crystalline silica dust. Other short term effects include irritation, choking and difficulty breathing.
<b>Chronic</b>	<b>Eye</b>	The mixture is not considered to be an eye irritant. Dust may be an eye irritant (mechanical irritation).
	<b>Skin</b>	The mixture is considered to be a skin irritant.
	<b>Sensitisation</b>	No ingredient present at concentrations > 0.1% is considered a sensitizer.
	<b>Mutagenicity</b>	No ingredient present at concentrations > 0.1% is considered a mutagen.
	<b>Carcinogenicity</b>	Zeolites have been classed by IARC as group 3 – cannot be evaluated as to their carcinogenicity to humans. However, there is evidence that this material does contain quartz and cristobalite. Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC Group 1). Crystalline Silica triggers 6.7A classification (confirmed carcinogen). The carcinogenicity of silica is related to long term (e.g., 10 years) inhalation of very fine particulate (e.g., from sand blasting or dry cutting of quartz containing substrates). Carcinogenicity of silica appears linked to development of silicosis (see systematic below) followed by complications and, eventually lung cancer
	<b>Reproductive / Developmental Systemic</b>	No ingredient present at concentrations > 0.1% is considered a reproductive or developmental toxicant or have any effects on or via lactation. The respirable fraction of the dust of this product is considered to be a target organ toxicant, because of the presence of crystalline silica at greater than 1%. Crystalline silica triggers 6.9A classification if it is in the form of a fine respirable dust in an occupational (chronic exposure) setting. This is due to the development of silicosis which can occur following exposure to extremely high levels of fine silica dust. Silicosis is a type of pneumoconiosis – a disease of the lung that causes inflammation, scar tissue, lesions and fibrosis in the lung (alveolar). Symptoms include shortness of breath, cough, fever, loss of appetite and cyanosis (bluish skin). Silicosis can occur following prolonged exposure (e.g., 10 years) to relatively high levels of fine crystalline silica dust. Based on limited animal research, it is possible that repeated inhalation of cellulose fibre dust may lead to inflammation and scarring of the lung.
	<b>Aggravation of existing conditions</b>	None known.

**12. Ecological Data**

**Summary**

This mixture may be harmful towards aquatic organisms

**Supporting Data**

<b>Aquatic</b>	Using EC <sub>50</sub> 's for ingredients, the calculated EC <sub>50</sub> for the mixture is between 1 and 100 mg/L. Data considered includes: Zinc sulphate 98.77ug/L (96hr, Oncorhynchus mykiss), 0.09877mg/L (48hr, Daphnia hyalina), 0.02469mg/L (5d, Ditylum brightwellii Diatom).
<b>Bioaccumulation</b>	No data
<b>Degradability</b>	No data
<b>Soil</b>	No evidence of soil toxicity.
<b>Terrestrial vertebrate</b>	See acute toxicity.
<b>Terrestrial invertebrate</b>	No evidence of toxicity towards terrestrial invertebrates.
<b>Biocidal</b>	no data

**13. Disposal Considerations**

<b>Restrictions</b>	There are no product-specific restrictions, however, local council, resource consent and state disposal conditions may apply, including requirements of trade waste consents.
<b>Disposal method</b>	In New Zealand disposal of this product must comply with the Hazardous Substances (Disposal) Notice 2017 and the requirements of the Resource Management Act for which approval should be sought from the Regional Authority. In Australia disposal of this product must comply with the requirements of state and local disposal regulations. The substance must be treated and therefore rendered non-hazardous before discharge to the environment.
<b>Contaminated packaging</b>	Disposal of contaminated packaging must comply with the Hazardous Substances (Disposal) Notice 2017 clause 12. Ensure that the package is rendered incapable of containing any substance and is disposed in a manner that is consistent with the requirements of the substance it contained and the material of the package. If possible reuse or recycle packaging.

**14. Transport Information**

**Land Transport Rule: Dangerous Goods 2005 - NZS 5433:2007**

There are no specific restrictions for this product (not a dangerous good).

<b>UN number:</b>	NA	<b>Proper shipping name:</b>	NA
<b>Class(es)</b>	NA	<b>Packing group:</b>	NA
<b>Precautions:</b>	NA	<b>Hazchem code:</b>	NA

**IMDG**

<b>UN number:</b>	NA	<b>Proper shipping name:</b>	Not regulated
<b>Class(es)</b>	NA	<b>Packing group:</b>	NA
<b>Precautions:</b>	NA	<b>EmS</b>	NA

**IATA**

<b>UN number:</b>	NA	<b>Proper shipping name:</b>	Not regulated
<b>Class(es)</b>	NA	<b>Packing group:</b>	NA
<b>Precautions:</b>	NA	<b>ERG Guide</b>	NA

## 15. Regulatory Information

### NZ regulations

This product is an approved substance under the Hazardous Substances and New Organisms Act (HSNO). Approval code: HSR002521, Animal Nutritional and Animal Care Products Group Standard 2020. All ingredients appear on the NZIoC.

### Specific Controls

Key workplace requirements are:

SDS	To be available within 10 minutes in workplaces storing any quantity.
Inventory	An inventory of all hazardous substances must be prepared and maintained.
Packaging	All hazardous substances should be appropriately packaged including substances that have been decanted, transferred or manufactured for own use or have been supplied
Labelling	Must comply with the Hazardous Substances (Labelling) Notice 2017.
Emergency plan	Required if > 10000L is stored.
Certified handler	Not required.
Tracking	Not required.
Bunding & secondary containment	Required if > 10000L is stored.
Signage	Required if > 10000L is stored.
Location compliance certificate	Not required.
Flammable zone	Not required.
Fire extinguisher	Not required.

Note: The above workplace requirements apply if only this particular substance is present. The complete set of controls for a location will depend on the classification and total quantities of other substances present in that location.

### Other Legislation

In New Zealand, the use of this product may come under the Resource Management Act and Regulations, the Health and Safety at Work Act 2015 and the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, local Council Rules and Regional Council Plans.

### Australian regulations

<b>Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP)</b>	Not scheduled
<b>Applicable prohibitions and notifications/licensing requirements Agricultural and Veterinary Chemicals Act</b>	Not listed
<b>Listing in the Australian Inventory of Chemical Substances (AICS)</b>	Magnesium sulphate, heptahydrate - IMAP - Tier I - Human Health Manganous sulphate, monohydrate - IMAP - Tier II - Human Health Zinc sulphate - IMAP - Tier II - Human Health Zeolites - IMAP - Tier I - Human Health Silicon dioxide - IMAP - Tier II - Human Health Crystalline silica quartz - IMAP - Tier II - Human Health
<b>Additional information</b>	Not applicable

## 16. Other Information

### Abbreviations

<b>Approval Code</b>	Approval HSR002521, Animal Nutritional and Animal Care Products Group Standard 2017 Controls, EPA. <a href="http://www.epa.govt.nz">www.epa.govt.nz</a>
<b>AICS</b>	Australian Inventory of Chemical Substances
<b>CAS Number</b>	Unique Chemical Abstracts Service Registry Number
<b>Ceiling</b>	Ceiling Exposure Value: The maximum airborne concentration of a biological or chemical agent to which a worker may be exposed at any time.
<b>Controls Matrix</b>	List of default controls linking regulation numbers to Matrix code (e.g. T1, I16).
<b>EC<sub>50</sub></b>	Ecotoxic Concentration 50% – concentration in water which is fatal to 50% of a test



<b>ES</b>	population (e.g. daphnia, fish species) Exposure Standard - The airborne concentration of a biological or chemical agent to which a worker may be exposed in a work day.
<b>EPA</b>	Environmental Protection Authority (New Zealand)
<b>GHS</b>	Globally Harmonised System of Classification and Labelling of Chemicals
<b>HAZCHEM Code</b>	Emergency action code of numbers and letters that provide information to emergency services, especially fire fighters
<b>HSNO</b>	Hazardous Substances and New Organisms (Act and Regulations)
<b>IARC</b>	International Agency for Research on Cancer
<b>IMAP</b>	Inventory Multi-tiered Assessment and Prioritisation (NICNAS Australia)
<b>LEL/UEL</b>	Lower Explosive Limit/ Upper Explosive Limit
<b>LD<sub>50</sub></b>	Lethal Dose 50% – dose which is fatal to 50% of a test population (usually rats).
<b>LC<sub>50</sub></b>	Lethal Concentration 50% – concentration in air which is fatal to 50% of a test population (usually rats)
<b>MSDS (SDS)</b>	Material Safety Data Sheet (or Safety Data Sheet)
<b>NICNAS</b>	National Industrial Chemicals Notification and Assessment Scheme
<b>NZIoC</b>	New Zealand Inventory of Chemicals
<b>STEL</b>	Short Term Exposure Limit - The maximum airborne concentration of a chemical or biological agent to which a worker may be exposed in any 15 minute period, provided the TWA is not exceeded
<b>TWA</b>	Time Weighted Average – generally referred to WES averaged over typical work day (usually 8 hours)
<b>UN Number</b>	United Nations Number
<b>WES</b>	Workplace Exposure Standard - The airborne concentration of a biological or chemical agent to which a worker may be exposed during work hours (usually 8 hours, 5 days a week). The WES relates to exposure that has been measured by personal monitoring using procedures that gather air samples in the worker's breathing zone.

**References**

<b>Data</b>	Unless otherwise stated comes from the EPA HSNO chemical classification information database (CCID).
<b>Controls</b>	EPA notices, <a href="http://www.epa.govt.nz">www.epa.govt.nz</a> , Health and Safety at Work (Hazardous Substances) Regulations 2017, <a href="http://www.legislation.govt.nz">www.legislation.govt.nz</a>
<b>WES</b>	The latest NZ Workplace Exposure Standards, published by WorkSafe NZ and available on their web site – <a href="http://www.worksafe.govt.nz">www.worksafe.govt.nz</a> .
<b>ES</b>	Workplace Exposure standards for airborne contaminants – Safework Australia.
<b>Other References:</b>	Suppliers SDS, EU ECHA, ingredients SDS's, ChemIDplus

**Review**

<b>Date</b>	<b>Reason for review</b>
June 2019	Not applicable – new SDS
June 2023	New logo, new address
May 2024	New address

**Disclaimer**

This SDS was prepared by Datachem LTD and is based on our current state of knowledge, including information obtained from suppliers. The SDS is given in good faith and constitutes a guideline (not a guarantee of safety). The level of risk each substance poses is relevant to its properties (as summarised in the SDS) AND HOW THE SUBSTANCE IS USED. While guidelines are given for personal protective equipment, such precautions must be relevant to the use. The likely GHS 7 classifications for this SDS have been estimated based on general information from the supplier (e.g., hazard, toxicological). This SDS is copyright Datachem and must not be copied, edited or used for other than intended purpose. To contact the SDS author, email [info@datachem.co.nz](mailto:info@datachem.co.nz) or phone: +64 21 1040951.

